CRITICAL REVIEW

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Mark Sagoff, Jeffrey Friedman

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Kristin Shrader-Frechette, Peter C. Yeager

ENVIRONMENTALISM AND LIBERALISM
Gus diZerega, Laurent Dobuzinskis, Roger Taylor

FREE MARKETS AND THE COMMON GOOD
Paul Heyne

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CONTENTS

Volume 6 Numbers 2–3 SPRING–SUMMER 1992

SPECIAL ISSUE ON ENVIRONMENTALISM

153 Nature versus the State? Markets, States, and Environmental Protection — ALBERT WEALE

171 Free-Market Environmentalism: Turning a Good Servant into a Bad Master — HERMAN E. DALY

185 For the Common Good? — PAUL HEYNE

211 Free-Market versus Libertarian Environmentalism — MARK SAGOFF

231 The Politics of Efficiencies, the Efficiencies of Politics: States versus Markets in Environmental Protection — PETER C. YEAGER

255 Science, Democracy, and Public Policy — KRISTIN SHRADER-FRECHETTE

265 The Environmental Implications of Liberalism — ROGER TAYLOR

283 Is Progressive Environmentalism an Oxymoron? — LAURENT DOBUZINSKIS

305 Social Ecology, Deep Ecology, and Liberalism — GUS DIZEREGA

371 Speaking to Trees — ERAZIM KOHAK

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389 Carbon Rights and Economic Development — STEPHEN J. DECANIO

411 Global Warming as Analytic Tip — EMERY M. ROE

Afterword

429 Politics or Scholarship? — JEFFREY FRIEDMAN

Exchange

447 The End of Sovietology: Reply to Nove — PAUL CRAIG ROBERTS

451 The End of Sovietology: Rejoinder to Roberts — ALEC NOVE

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Albert Weale

NATURE VERSUS THE STATE? MARKETS, STATES, AND ENVIRONMENTAL PROTECTION

Is it possible to reconcile a classical liberal approach to economics with a concern for the environment? The contributors to Economics and the Environment: A Reconciliation *contend that it is. But they fail to distinguish properly between classical liberalism and a widespread orthodoxy in environmental policy communities in Europe and North America to the effect that economic instruments for environmental policy need more serious attention than they have hitherto received. Once this orthodoxy is distinguished from classical liberalism, the latter is seen to be implausible. In particular, the classical liberal approach fails to deal with the practical and administrative problems involved in enforcing private property rights solutions to problems of environmental protection, wrongly generalizes from the failures of U.S. environmental policy to the failure of public regulation as such, and fails to take into account the claim that nature should be accorded intrinsic value.*

Economics and the Environment: A Reconciliation (Vancouver, B.C.: Fraser Institute, 1989), edited by Walter Block, contains a series of ten essays designed to show, in the words of the introduction, "that it is possible

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to use economic means to obtain environmental ends." Pursuing this theme, the papers argue that "by using such economic building blocks as free market prices, private property rights, and, most important, a legal system that carefully defines, delineates, and protects such rights, the goals of the environmentalists can be achieved" (Block, vii).

The various contributors employ three approaches to the understanding of these building blocks. The first is the conventional neoclassical tradition, which is happy to employ the concept of consumer surplus and to estimate welfare losses and gains in terms of the area under the Marshallian demand curve. In the present volume the clearest examples within this tradition are the article by John Chant, Donald McFetridge, and Douglas Smith, criticizing arguments of Canadian conservationists; the article by Douglas Smith on the protection of the ozone layer; and the article by Edwin Dolan on the control of acid rain. The second tradition is that of the public choice–property rights school, which is concerned with the analysis of alternative institutional forms for the allocation of property rights. The clearest examples of work within this tradition are provided by Thomas Borcherding on natural resources and transgenerational equity and Terry Anderson on the market process and environmental amenities. The third tradition is that of the Austrian subjectivist school, which stresses the importance of uncertainty and entrepreneurial discovery in the wealth-accumulating process of capitalism, within which the central role of markets is to provide incentives for entrepreneurs to innovate. Richard Stroup draws upon this tradition in the three pieces to which he contributes, as does Murray Rothbard in his discussion of law, property rights and air pollution. Most authors use elements of all three traditions in an eclectic fashion, in order to support a free-enterprise orientation toward environmental policy problems.

Nowhere in the volume is the concept of the environment ever clearly defined, but from the examples used it is clear that the authors have in mind two aspects of the natural world. First, they consider certain natural resources, like fisheries stocks or oil reserves, which form important inputs into human consumption. Second, they are concerned with the load-carrying capacity of the air, waterways, and soil that provide the sinks into which wastes from consumption are dumped. That is, they are concerned both with the conservation of natural resources and with the control of pollution. The crucial argument pursued in all the papers, though with varying degrees of vigor and with some internal dissension, is that the use of economic incen-

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tives and price signals is a better way to protect natural resources and control pollution than public ownership or administratively determined regulation.

One rather irritating feature of the book is the evangelical tone that pervades many of the contributions, premised, I suppose, on the assumption that the authors belong to a small band of true believers whose task is to reveal to the rest of us the error of our ways. From this perspective the heathen to be converted comprise environmentalists, social democratic intellectuals, and governments. You would never guess from reading this collection that at the time it was published many governments had the development of economic instruments for resource conservation and pollution control under active consideration, and in particular that the Organization for Economic Cooperation and Development had commissioned an empirical study of the existing use of such instruments by its member states.[1] There is no reference whatsoever to some well-known work on the use of water charges within the Federal Republic of Germany, and only two references to the thorough study of the U.S. Environmental Protection Agency's policies of tradeable permits, bubbles, and offsets.[2]

What is the reason for these omissions? I suspect that the answer is to be found in that unsubtle concept of public choice analysis: rent-seeking. In order to generate subscriptions and revenue, intellectuals in free market think-tanks like the Fraser Institute have to talk up the threats from big government to the free enterprise system. Since the unknown is always more threatening than the known, it helps in this task not to be too accurate or up-to-date in your presentation of the empirical evidence; otherwise you may only succeed in showing that politicians and public officials in a number of governments are sensitive to the problems associated with existing regulatory strategies and are taking steps seriously to examine alternatives. To admit this would be considerably to weaken the rhetorical impact of the free-enterprise case.

The omissions also have to do with an unwillingness to use the evidence of comparative political science, evidence that I shall later seek to show has some bearing on the generalizations that one can draw about "government." When the authors in this volume speak about "government" in the abstract, they almost always mean the U.S. government. Virtually all the empirical references to public policy strategies are to U.S. government policy, and most of the examples that do the work, with the honorable exception of Terry Anderson's contribution, are drawn from U.S. instances. Government land own-

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ership and California coastal protection are the examples used by Borcherding (though to do him justice he does wander north to Alberta's Heritage Savings Trust Fund); Progressive ideology, federal range land controls, electricity supply in the northwestern states, and the Synthetic Fuels Corporation are the examples used by Baden and Stroup; California's Proposition 65 and Love Canal are the examples appealed to by Stroup in his own article; the 1977 amendments to U.S. Clean Air legislation are discussed by Dolan; whilst Murray Rothbard characteristically dispenses with the need to consider any empirical evidence at all about the effectiveness of any government's policies.

This neglect of experience other than that of the United States would not be so bad had the wrong conclusions not been typically drawn from the examples that *are* cited. Thus, Jane Shaw and Richard Stroup, in what in some ways is a quite interesting article on the uncertainties surrounding global climate change, conclude by drawing attention to the contrast between an earthquake in California that resulted in 62 deaths and an earthquake in Nicaragua the following year that killed tens of thousands. (The subsequent earthquake in Armenia would have formed a similar contrast.) The differences are, as Shaw and Stroup point out (following Aaron Wildavsky), partly to be accounted for in terms of differences in wealth between the societies; but they also stem from the effectiveness of building and planning regulations in California, which have mandated structures capable of withstanding anticipated shocks. Good regulation is, of course, like good gardening—unnoticed by the amateur eye. For the professional analyst to ignore examples of the effectiveness of government regulation, however, is simply to distort the interpretation of the available evidence.

Environmental Policy and Economic Instruments

Given the way the case is presented in the various papers, it is not always easy to see the rational kernel in the ideological husk. It may be helpful therefore to isolate two versions of the thesis that economic policy instruments are important in the pursuit of environmental policy goals. The first is a mild version of the thesis that would secure wide agreement across the ideological spectrum from social democrats through progressive liberals to classical liberals. The second seems to me to be distinctively tied to classical liberal or libertarian beliefs. My argument in brief is that whereas there is a good, though by no means

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overwhelming, case to be made for the milder of the two claims, there is virtually no reason in logic or experience to endorse the second. The essays in this volume gain such plausibility as they do by systematically trading on the ambiguity contained in these two rival versions of the thesis.

Begin, then, with a series of propositions that would gain wide assent across the ideological spectrum. The first of these is that policy problems connected with resource management and the control of pollution find their origin in the fact that the environment is a public good, the value of which is subject to depletion because of the dilemma of collective action. Thus, a lawn offering a pleasant view to those who live round it is a public good. However, in order to be maintained as such, it will typically require contributions from those who benefit from it, say by the beneficiaries refraining from walking across the lawn and thereby turning it into a mud patch. To be sure, the lawn can tolerate a certain number of individuals walking across it, but once that number becomes too great it will become worn and will soon look an eyesore. Public goods, like my hypothetical lawn, typically require general, but not universal, contributions from individuals if they are to be produced or their value sustained. However, individuals can quite rationally calculate that their contribution to the public good is, taken by itself, insignificant, and if walking across the lawn saves time or trouble each individual will be tempted to free ride on the restraint shown by others. The trouble is that if everyone calculates in this way then the lawn will quickly be worn down.[3]

Many problems of environmental protection have this structure. The exploitation of natural resources like timber, fish stocks, or grazing land can take place at a renewable level provided that an upper limit is placed on the freedom of individuals to engage in resource extraction. If that aggregate limit is passed, then stocks begin to decline to the detriment of all users. Similarly, most natural systems, like oceans, seas, or the air, have an in-built limit on their capacity to absorb and recycle wastes. If that limit is exceeded by the unrestrained dumping of wastes by individuals, then the natural system can no longer absorb the load and environmental deterioration sets in, often accompanied by some damage to human health, as holiday makers, swimming in the polluted seas of the Mediterranean and suffering stomach infections, know only too well.

The protection of the environment is a public good in the usual sense, therefore, that the benefits it produces are nonrivarous and nonexcludable. If there is a universality of benefit, it follows that we

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all have an interest in ensuring the protection of the environment. However, it does not automatically follow that action by the state is the best way to counteract the tendency toward collective suboptimality. Elinor Ostrom has pointed out that the iron logic of the collective action problem does not operate in many circumstances because a variety of non-state social institutions have evolved to constrain and limit the freedom of action of those seeking access to common-pool resources.[4] Yet there would seem to be a prima facie responsibility for the state to ensure that the collective interest is being attended to, if only because it is the sole association that is all-encompassing and can therefore look to the general interest, provided, of course, that it is suitably structured and motivated.[5]

One reason why the state should take this responsibility seriously is, as many of the authors in this volume correctly point out, that public policies can themselves contribute to environmental depletion, for example tax policies that lead to higher rates of write-down on depreciation than is consistent with a concern for the welfare of future generations (Borcherding, 98). A spectacular example of public policies that are damaging to the environment (not cited by any of the authors in this volume) is the Common Agricultural Policy of the European Community which, by providing guaranteed purchase prices for agricultural commodities, has encouraged the excessive use of nitrogenous fertilizers by European farmers, in turn causing the eutrophication of European waterways and estuaries.

The second proposition of my presumed orthodoxy is so banal as to require little justification. It is that if we all have an interest in protecting the environment, we have an interest in reducing environmental damage at the least cost. If we can reduce environmental damage in an economically efficient way, then we can either spend the efficiency savings on an even higher level of environmental protection or on other desirable goods and commodities. Whichever option we choose, we are better off, other things being equal, in pursuing environmental protection in an economically efficient way than we would be in using economically inefficient instruments.

My third putatively orthodox proposition is a little more contentious, but nonetheless I think it can be expressed in a form in which it would be broadly acceptable. It holds that in many respects economic instruments, for example taxes on polluting activities or tradeable permits for pollution, promise to be more economically efficient than traditional administrative regulation because they offer greater flexibility in the allocation of resources at the margin. Thus, if firms are

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taxed on the unit of pollution they produce, those firms that can reduce pollution at least cost will do so and often in such a way as to exceed the targets that would be set by administrative regulation. Pollution taxes encourage each firm to reduce its pollution as much as possible within its cost constraints because the firm gains economically for each unit of pollution it reduces.

For these reasons I am inclined to think (along with what I take to be a growing consensus among many environmental policy analysts in Europe and North America) that economic instruments deserve more serious attention than they have so far received from policymakers. Moreover, there is one further consideration favoring more attention for economic policy instruments, which is not mentioned by any of the contributors to the Block volume, but which seems to me to be one of the most important arguments, namely that economic instruments offer a way of dealing with non-point sources of pollution. Too much of the analysis contained in the Block volume focuses upon the application of environmental regulation to production plants. In fact, many serious problems of pollution arise from dispersed economic activity, for example agricultural production or the consumption of goods and disposal of wastes by consumers. Various forms of taxation offer a means for dealing with the problems that arise in consequence. For example, one of the ways to deal with the excessive use of pesticides or fertilizers by farmers and domestic gardeners is by means of input taxes on the commodities in question. Similarly, one of the ways to deal with waste disposal is by means of refund deposits, as used successfully in Scandinavia and the Netherlands. Such a use of economic instruments need not achieve a complete solution to the problem of non-point sources of pollution, but in an area of policy in which "every little bit helps," they promise a useful addition to the range of tools policymakers have at their disposal.

Bringing together these various points, I think it safe to say that we have in the above three propositions an approach to the relationship between economics and the environment that could be endorsed by many regardless of ideology. Environmental degradation arises from market failures created by the free-rider problem, but care needs to be taken in the prescriptions for dealing with such failures. In particular, it may be counterproductive simply to rely upon the government to adopt effective administrative regulations protecting the environment, not least because some causes of environmental degradation are to be found in government policies. Moreover, policy instruments that emulate the price mechanism, if they can be made to work, may well

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offer more efficient tools for environmental protection than traditional administrative regulation.

How do the majority of contributors to the Block volume diverge from this broad consensus? Classical liberals or libertarians would want to add one further crucial ingredient, namely that the role of government should be reduced to the minimum possible in the design of policies for pollution control. Here, we touch upon the most distinctive feature of the classical liberal approach: the principled preference for a property-rights approach over government regulation. This is the core of the second, and more sweeping, version of the thesis that economics and the environment can be reconciled.

The starting point for this argument is a commitment to a strengthened version of the proposition that economic instruments promise to be more efficient than government regulation. Judging from the Block volume the classical liberal view is that this proposition is not a matter of conjecture or promise, but simply a matter of fact. Thus, for those contributors within the neoclassical perspective, this is simply a consequence of the flexibility of economic instruments, which allow the optimal allocation of resources at the margins of productive economic activity. For those in the public choice–property rights school, it is because government failure is more intense than market failure, and so we cannot expect government regulation to remedy the defects of the market. For those in the Austrian subjectivist tradition, markets are superior to government coordination of economic activity because they provide incentives and opportunities for entrepreneurs to innovate. Whatever theoretical rationale is given to the classical liberal stance, the conclusion in each case is that government intervention to promote environmental protection, particularly government intervention that takes the form of public ownership or administratively determined regulation, is to be avoided or minimized as much as possible.

This thesis is clearly much bolder than the claim I have ascribed to my putative orthodoxy. In the consensus account, economic instruments are seen as a useful supplement to the tools of government, and, while in some cases they might eventually replace existing administrative instruments, in most cases they will simply complement them. For the classical liberal, by contrast, the goal is to replace existing techniques with strengthened and augmented market mechanisms.

To justify this bolder position requires two claims to be substantiated, both of which are highly contestable. The first is that there are effective and efficient alternatives to government regulation. The sec-

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ond is that government failure is pervasive and irremediable in the field of environmental policy. Are either of these propositions true?

Pricing, Property Rights, and Government Failure

The least radical departure from the consensus position that I have outlined would be to keep the idea that the role of government is to set environmental quality objectives but to insist that economic instruments should be used to achieve these objectives. The aim here would be to shift the balance in the use of policy instruments away from administratively determined regulation toward pollution taxes, charges, offsets, bubbles, and the like. In fact there is at least one paper in the volume, by Douglas Smith on the protection of the ozone layer, that more or less adopts this approach. As Smith points out (188), a purely free-market approach to the protection of the ozone layer is pretty implausible given the difficulties (and I would add expense) of establishing property rights in the stratosphere. What Smith opts for instead is the solution adopted by the 1987 Montreal Protocol in which the scale of reductions in CFC emissions was determined politically, but the flexibility of economic instruments was used in order to allow detailed targets for reduction for individual enterprises to be negotiated firm by firm. In effect, this is to endorse what William Baumol and Wallace Oates many years ago suggested was the most feasible approach to the use of economic instruments, the "standards-tax" approach, in which standards are politically determined but economic instruments are used to meet them.[6]

I suspect that the plausibility of this position, as a general prescription for environmental policy, depends upon the tone of voice in which the argument is advanced. It seems more plausible if it is advanced in a cautious and empirical manner than if it is presented as an a priori axiom the truth of which is incontestable. There is in fact no general knock-down argument in favor of pricing solutions over administratively determined regulations. One reason for this is that arguments for the putative superior efficiency of economic instruments typically ignore certain crucial features of policy implementation, for example transaction and information costs. Such costs cannot be treated as peripheral, but have to be weighed and considered thoroughly. Indeed, the information that would be required to set optimal levels of taxation on pollution, even in order to meet exogenous, politically determined goals, is the same information that would be

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necessary to set administratively determined regulations in an optimal fashion.[7] If such information is unavailable to "command and control bureaucrats," why should it be available to those imposing pollution taxes? Hence, we cannot simply assume that standard textbook analyses of the superior efficiency of economic instruments over administrative instruments has easy application in the real world of policy, where information has to be collected and practical measures designed. Taking these administrative and transactions costs into account, it may be more cost-effective to rely upon incremental adjustments to rules limiting emissions than to calculate and enforce a notionally optimal taxation regime.

A further problem is pointed out in Dolan's paper on the use of economic instruments for the control of acid rain. Many of the putative efficiency gains that might be secured with the use of economic instruments are lost when account is taken of pollution "hot spots" (225–7). Pollution in one place may be tolerable, whereas marginal additions somewhere else may be intolerable. When the scope of emissions trading is reduced to take into account these locational effects, many of the efficiency gains disappear.

From these arguments it would seem that economic instruments cannot be assumed a priori to be capable of replacing administrative regulation, and the plausibility of the classical liberal ideal of minimizing government intervention as a matter of general principle is undermined. What, then, are we to make of the yet more radical argument that it may be possible to minimize, or, in the limiting case, entirely to dispense with, the role of the state by seeking a property-rights solution to the problems of preventing pollution and conserving natural resources? The principle of privatizing natural resources as a way of dispensing with the role of government is the approach that finds most consistent favor with the authors in this volume. Presumably one of the reasons for this popularity is that such an approach attacks the root of the problem, namely that at present damage to the environment is a public bad that leaves no one, apart from governments, responsible for ensuring that the damage does not occur. If the environment were parceled out in the form of property rights owned by individuals or private corporations, then the owners would have an incentive to preserve stocks and prevent pollution by seeking for legal remedies against those responsible.

The clearest and most persuasive exposition of this approach in the present volume is Terry Anderson's claim that the privatization of instream flows for rivers will improve their environmental quality. He

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contrasts U.S. court decisions holding that the maintenance of instream flows does not constitute a beneficial use of water with the private ownership of rivers in the United Kingdom. He argues that if in the United States the legal obstacles to the establishment of instream rights were removed, there would be improvements in the quality of rivers, because fishing rights could then be sold and river quality would acquire an economic value. Moreover, owners of rivers and river banks would have the incentive to take legal actions against polluters in order to protect their assets.

I am not sufficiently familiar with U.S. law regarding property rights in natural resources to be able to make an intelligent comment on the consequences of adopting Anderson's proposal, but there do seem to be a number of general points that can be made. First, Anderson is in danger of committing the fallacy of affirming the consequent. Supposing that river quality in the United Kingdom is on average higher than that in the United States (and given the poor quality of many British rivers this has to be a supposition only for the purposes of the argument), it does not follow that the cause of this difference is entirely attributable to the difference in property rights between the two systems. Great Britain, for obvious geographical reasons, has a large number of relatively short, fast-flowing rivers. Since the spatial concentration of British industry is high, it is hardly surprising that a great many rivers are of a high quality.

Second, one should not be too starry-eyed about the ability of owners or those with an interest in the purity of rivers to be able to protect their interests by legal remedies for tort and nuisance alone. A number of British firms have found that it pays to put considerable resources into their legal departments, resources that are unlikely to be matched by the local anglers' association or even the local lord of the manor. Moreover, to contrast administrative regulation and private property rights is misleading. The enforcement of private property rights may well be strengthened by the existence of a regulatory system that sets river quality standards and provides a separate remedy for breaches of pollution standards. In other words, it is simply a gratuitous assumption to suppose that regulatory standards and private-law remedies are mutually exclusive policy instruments. The effective functioning of one may well reinforce the effective functioning of the other.

Third, there is the danger of drawing the wrong inference from the U.S. example. It is surely significant that, on Anderson's own analysis, it is *courts* that have restricted the notion of beneficial use. For a classical liberal who distrusts administrative bureaucracy, Anderson does

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not provide much evidence that superior performance can be expected from the juridical enforcement of private property rights.

One appeal, I suspect, of the juridical model is the apparent prospect it holds out of depoliticizing environmental issues. By turning environmental protection into a matter of private civil law rather than public or administrative law, the hope is to take the determination of obligations and interests out of the contentious realm of public debate and into the supposedly uncontentious area of private contractual and tort adjudication.

If this is part of the motive for the impulse toward the property-rights approach, it seems to me to be hopelessly optimistic and misguided. In fact, Murray Rothbard's concluding chapter on "Law, Property Rights, and Air Pollution" can be read as the *reductio ad absurdum* of any ambition to take environmental protection out of the realm of political debate. Rothbard announces a whole series of principles for the determination of tort and contractual liability that obviously have for him the status of self-evident truths, but which will strike many readers as at best amusing diversions and at worst simply nonsense. For example: anyone who is the victim of an attack is entitled to assume it is deadly and may use deadly force in retaliation (241); all acts are "permissable" [*sic*] except overt acts of aggression (242); an airport producing noise has "homesteaded" the decibels, provided that there is empty land around it (248); air pollution by gases or particles that are undetectable to the senses should not be regarded as constituting aggression (253); and so on. The point is not about the substantive merits of the principles (though the whole approach strikes me as being pretty nonsensical). It is that there has to be some process that decides among the variety of principles, plausible and otherwise, which will be advanced to control pollution and protect natural resources. Until everyone shares the same convictions about which principles should regulate human interaction, democratic political processes, for better or worse, provide the only way to decide among them.

The final reason for being skeptical of the property-rights approach as an alternative to regulation is the simplest, but in some ways the most powerful. There may be some important resources that for technical reasons simply cannot be privatized. Smith instances the ozone layer. Oceans, transboundary winds, and global climate stability are other obvious examples.

The natural thought for most people to have in these circumstances is that legitimate democratic governments cannot escape the task of

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formulating principles of environmental policy and putting the administrative machinery in place to ensure that they are implemented. One reason the overwhelming majority of authors in the present volume resist this natural thought is that they are mistrustful of the ability of governments to perform this task efficiently and effectively. It is at this point that we encounter the complete neglect by the contributors of the evidence on this issue from empirical political science—a neglect that throws into doubt the whole logic of the anti-regulation argument being advanced.

Putting the issue as cautiously as I can, I think it fair to say that most studies of environmental and regulatory policy do not show the U.S. governmental system in a good light by comparison with other countries. One reason for this is that policy making in the United States is characterized by sharp fluctuations of attention from the public and politicians. When an issue first gains attention, policymakers have a strong incentive to write powerful demands into legislation while they have public opinion on their side. Yet, since the U.S. system of the separation of powers gives numerous points of access to interested parties, compromises and pork barrel deals will often make the resulting legislative mandates impossible to implement sensibly.

An example of these processes at work has been air pollution policy for the control of sulphur dioxide. As Bruce Ackerman and William Hassler have shown, the imposition of a particular technology on coal-fired power stations can best be understood as a result of political action by a coalition of environmentalists and Eastern high-sulphur coal producers.[8] Without this political pressure it would have been possible for the federal authorities simply to impose emission limits consistent with ambient air quality plans, leaving the utilities with the choice of how best to meet the limits and thereby securing the air quality improvement at lower cost. The moral to be drawn from this example, I suggest, is not that government should withdraw from setting environmental quality objectives and emission limits, but that the U.S. system of government is particularly prone to distortion in its policy-making processes from the lobbying of special interests.

One clear and illuminating account of U.S. policy making in a comparative context is to be found in Lennart Lundqvist's work on air pollution policies in the United States and Sweden, significantly titled *The Hare and the Tortoise*.[9] Lundqvist points out that when environmental concern began to appear on the agenda of liberal democracies in the late 1960s and early 1970s, U.S. legislators acted with the speed of the hare, particularly in the field of air pollution. There were legisla-

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tively mandated tight timetables, stringent air quality standards, and uniform emission limits. The Swedish approach, by contrast, took the tortoise as its model: no legislatively mandated timetables but steady incremental improvements in air quality, considerable discretion for officials to vary performance standards by plant, and a political tradition and culture that stressed the importance of consensus. Given pervasive implementation failure in U.S. government arising from the position and influence of special interests, it is not surprising that the Swedish approach was more successful in the subsequent decade than its U.S. counterpart. An equally striking comparison is between the United States and Germany. The latter not only manages to operate a successful system of water pollution charges but also succeeded in reducing sulphur dioxide emissions in the 1980s by a strategy of strict uniform emission limits but without specifying a required technology for power plants.[10]

What these contrasting examples show is that to complain about the failures of "government" in the abstract is simply misleading. We may identify failures of particular governments, and perhaps more helpfully of particular types of institutional forms of government (unitary versus federal, etc.), but we are unlikely to be able to say anything terribly meaningful about *government* and environmental policy per se. To put the point in another way, even if the authors had been successful in indicting U.S. government failures in the development and implementation of environmental policy, the logical implication would be to see how far these failures were due to the specific forms and structures of the U.S. government rather than to some notion of generic "government failure." This can only be done by looking at the comparative empirical evidence, evidence that political science has been particularly rich in providing.[11]

In this context I should note in passing my guess about what will turn out to be the most important sources of environmental policy failures, once the empirical evidence is looked at in detail. I suspect that one particular feature of U.S. government will be seen to be responsible for such failures, namely its non-majoritarian character. As Arend Lijphart has pointed out, the U.S. system of checks and balances and its elaborate federal structure place it firmly in the non-majoritarian category of governments.[12] Without a set of institutions yielding a clear notion of majority preference, it is extremely difficult to ascertain and implement what is in the general interest rather than what is the sum of individual interests. I mention this point especially in the present context, because there is sometimes a tendency within

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libertarian rhetoric to indict majority rule as the villain of the piece, citing as evidence a system of government—that of the United States—which is designed to frustrate legislative and policy initiatives even when they have clear majority support.

Environmental Ends?

So far I have concentrated upon what I take to be the central argument of the Block volume. This is the claim that it is not only possible, but also likely, that environmental ends will be better achieved by economic means than by existing regulatory approaches. But there is another issue that has a number of implications to which I cannot do adequate justice, but which seems important enough at least to mention. This is the question of whether *any* economic approach will adequately capture the ends of environmentalism.

Although the Block volume contains a diversity of economic approaches, they are united in sharing a conception of value that is ultimately subjectivist. On this subjectivist account, the value of natural resources or of pollution control is to be assessed from the perspective of human individuals living in society. This is just as true of the neoclassical tradition as it is of Austrian subjectivism, although the expression of the claim tends to be a little more vigorous in the latter case than in the former. By definition, therefore, the argument of many environmentalists that nature is to be respected as having intrinsic value is simply assumed to be false or implausible. Consequently, it will be impossible to capture at least some relevant features of environmentalism within any of the paradigms advanced in this book.

To sharpen this issue, it is worth looking at the structure of the arguments about species conservation. From a subjectivist theory of value it will follow that the species to be conserved are those useful to human beings, or those on which human beings put value. Indeed, many of the essays in this volume seek to show how, for example, there are ingenious technical devices that will allow migrant fish stocks or range-feeding animals like bison to be tagged and identified as private property. Call such an approach the principle of specific species conservation. It would be fair to say that if it were possible to show that particular species could be protected by technical innovations allowing the privatization of species stocks, then this would demonstrate, in the view of all the contributors to this volume, the

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superiority of the classical liberal approach. Private property can save species.

The difficulty here, however, is that the preservation of specific species is not the appropriate way to formulate the goals of environmentalism with respect to species conservation. The current standard formulation is in terms of the principle of biodiversity.[13] Such an approach is likely to lead to practical conclusions quite different from those implied by the principle of specific species conservation. This arises because the principle of sustaining biodiversity stresses the conservation of species that may not be useful to humankind at all or that certainly may not be useful in the short term.

Now it is possible to argue that the practical difference between the principle of biodiversity and the principle of specific species conservation will be small, since uncertainty in the application of the specific species principle will incline it to recommend policies that are similar in scope and effect to the principle of biodiversity. Thus, a number of environmentalists have been led to argue in favor of the conservation of tropical rain forests because it will be useful to humankind to preserve the enormous genetic diversity that they contain, most notably the potential for medical use that such genetic diversity supposedly exhibits.[14] But there is no reason to think that the coincidence will be exact or complete in every respect, and there are at least two reasons for thinking that the principles will diverge.

The first of these reasons is empirical. It turns out that it is possible by conservation measures to conserve specific species at high levels in some territories but only by reducing biodiversity in the surrounding area. Hence we cannot take an increased count of particular species in a small area as an indication of more generally increasing diversity. Even successful species conservation, if it is undertaken without reference to the surrounding ecology, may reduce existing biodiversity.[15]

The second reason is logical. Insofar as the ideal of biodiversity is based on the notion that there is an intrinsic value to nature as such, then this will lead to arguments for the protection of species that may be not only useless in terms of human consumption, but perhaps even harmful to humans. The often-heard objection to this line of argument is that such an approach logically entails not practicing medicine on the grounds that it is harmful to the virus. However, this is simply a non sequitur. To say that a species has intrinsic value is not to say that its value is equal to that of every other species. It is simply to say that its value is not exhausted by reference to its use for human beings. To take this sort of consideration into account is of course a political

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decision, and a decision that can only be given effect through the state.

NOTES

1. J. B. Opschoor and H. B. Vos, *Economic Instruments for Environmental Protection* (Paris: Organization for Economic Cooperation and Development, 1989).
2. A good introduction to German water pollution charging can be found in G. M. Brown, Jr. and R. W. Johnson, "Pollution Control by Effluent Charges: It Works in Germany, Why Not in the United States?" *Natural Resources Journal* 24, no. 4 (1984): 929–66. On emissions trading see T. H. Tietenberg, *Emissions Trading* (Washington, D.C.: Resources for the Future, 1985).
3. The example, as well as the distinction between universal and general compliance, is taken from David Lyons, *Forms and Limits of Utilitarianism* (Oxford: Clarendon Press, 1965).
4. Elinor Ostrom, *Governing the Commons* (Cambridge: Cambridge University Press, 1990).
5. For a discussion of these matters that is still relevant, see Brian Barry, *Political Argument* (London: Routledge and Kegan Paul, 1965) chs. 14–15.
6. William J. Baumol and Wallace E. Oates, *Economics, Environmental Policy, and the Quality of Life* (Englewood Cliffs, N.J.: Prentice-Hall, 1979): 354–6.
7. Alan Marin, "The Choice of Efficient Pollution Policies: Technology and Economics in the Control of Sulphur Dioxide," *Journal of Environmental Economics* 5 (1978): 53.
8. Bruce A. Ackerman and William T. Hassler, *Clean Coal/Dirty Air* (New Haven: Yale University Press, 1981).
9. Lennart Lundqvist, *The Hare and the Tortoise: Clean Air Policies in the United States and Sweden* (Ann Arbor: University of Michigan Press, 1980).
10. Sonja Boehmer-Christiansen and Jim Skea, *Acid Politics* (London: Belhaven Press, 1991); Albert Weale, Timothy O'Riordan, and Louise Kramme, *Controlling Pollution in the Round* (London: Anglo-German Foundation, 1991).
11. For my review of some of this evidence see Albert Weale, *The New Politics of Pollution* (Manchester: Manchester University Press, 1992).
12. Arend Lijphart, *Democracies* (New Haven: Yale University Press, 1984).
13. See, for example, the chapter on species and ecosystems in World Commission on Environment and Development, *Our Common Future* (New York: Oxford University Press, 1987), ch. 6.
14. See the World Commission on Environment and Development report for an example.
15. For a good discussion of the problems of designing policies to sustain

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biodiversity, see Reed F. Noss, Steven P. Cline, Blair Csuti, and J. Michael Scott, "Monitoring and Assessing Biodiversity," in Erik Lykke, ed., *Achieving Environmental Goals: The Concept and Practice of Performance Review* (London: Belhaven Press, 1992), 67–85.

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Herman E. Daly

FREE-MARKET ENVIRONMENTALISM: TURNING A GOOD SERVANT INTO A BAD MASTER

The virtue of internalizing environmental costs so that prices reflect full social opportunity costs at the margin, reaffirmed by Terry Anderson and Donald Leal, is unarguable. Beyond that, however, Anderson and Leal's Free Market Environmentalism *neglects the classic works in the intellectual tradition to which it is supposed to be a contribution; is unconvincing and inconsistent in the functions it ascribes to the "environmental entrepreneur"; conflates problems of distribution and scale with the problem of allocation; ignores international dimensions; and misrepresents the debate over "sustainable development."*

Free Market Environmentalism, by Terry L. Anderson and Donald R. Leal (San Francisco: Pacific Research Institute, 1991), reaffirms the virtue of full-cost pricing—that is, the doctrine that prices should reflect full marginal social opportunity costs. The focus is specifically on environmental costs rather than social costs in general, but the principle of internalizing external costs has been applied in many areas. The environment especially suffers when government intervenes to subsidize consumption, whether of water by farmers in the western United States, or of cleared land by cattle ranchers in the Brazilian Amazon.

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Hayek, Yes—But What about Coase and Pigou?

Allocation by decentralized market decision making is much better than centrally planned allocation, for reasons well-expressed long ago by F. A. Hayek, and that cannot be restated too often. Although this principle has been well known for a long time, it is amazing how routinely we violate it in practice, and the authors deserve credit for pointing this out with specific examples, largely drawn from the American West. The book has many important lessons for those who think that the market is always the enemy of the environment.

The problem of internalizing social and environmental costs has a long history of discussion in economics. There are two main alternative approaches to internalizing external costs, the Pigouvian and the Coasian, after their two champions, A. C. Pigou[1] and R. H. Coase.[2] Pigou advocated the imposition of taxes or subsidies to close the gap between social cost (or benefit) and private cost (or benefit). Coase advocated the definition or redefinition of property rights in such a way that bargaining among private citizens would lead to the incorporation of formerly external costs in decisions. He demonstrated that from the point of view of efficiency the important thing is that someone should own the rights to use, say, air and water. Whether ownership was vested in those wanting to use the environment as a source of clean inputs, or as a sink for waste outputs, was not important as a matter of efficiency, although it certainly was an equity issue. Anderson and Leal clearly favor the Coasian over the Pigouvian approach. I do not at all criticize them for that, but I do think it is wrong to equate the Pigouvian approach with central planning, and the Coasian approach with the free market. This is in effect what they do (167), but I cannot give definitive citations since they make not even the most passing of references to either Coase or Pigou. The lack of historical grounding of their work is distressing.

What is unfortunate is that they mistake this important part of the truth for the whole truth—the *pars pro toto* fallacy, to indict them in Latin for their crime against reason. Their vision of the economic problem is also partial—they see it entirely as the problem of self-interested individuals acting on the basis of diffuse knowledge (5). Hayek has shown that this is indeed an important part of the problem—how to use diffuse, ephemeral knowledge not given in its totality to anyone. The market can use such knowledge; central planners cannot. And surely we are all self-interested.

But there is much more to it. This self that interests us so much is in

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reality not an isolated atom, but is constituted by its relations in community with others—the very identity of the self is social rather than atomistic. If the very self is constituted by relations of community, then self-interest can no longer be atomistically self-contained or defined independently of the community. While some knowledge is diffuse and ephemeral, and it is a great virtue of the market that it can tap that knowledge, other knowledge is quite public, universal, and fairly permanent—the laws of thermodynamics, for example, or the knowledge that murder and theft are wrong. To insist that everything is reducible to atomistic, selfish individuals acting to maximize their gain on the basis of diffuse, piecemeal knowledge locked in their separate sealed heads is to treat an abstraction as more real than the concrete experience from which it has been abstracted. More about that later.

The Cattleman's Paradigm: Fencing and Branding

The book argues that when private costs diverge too much from social (environmental) costs, property rights and technology usually evolve to bring them back into conformity. There is very little if any need for government to intervene to internalize external costs—economic and technological evolution will do it for us. All environmental problems can be solved by some high-tech analog to the fencing of land or the branding of cattle. These new property-defining technologies will evolve in the future, just as fencing and branding evolved in the past in the Far West, to give property-rights solutions to environmental problems. Wolves can be "fenced" with a radio-activated collar (34) that injects the animal with a tranquilizer when it crosses an electronic barrier so that it may be returned to its designated habitat (presumably the habitat owned or rented by its owner?). Whales can be "branded" by genetic prints and monitored by satellites that would establish a mechanism for enforcing property rights in whales (34). If you want to save the whales you can go buy some—and then spend all of your time and money in court enforcing your property right against whomever damages your whales with pollutants that have also been chemically "branded" and rendered traceable. Perhaps you could even sue another whale owner over custody of offspring. Litigation to establish the property rights of whale owners relative to krill owners will certainly enrich the lawyers.

Since the focus is on property rights it is important to ask where

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these rights come from and how they are established. Here we get two conflicting stories. The dominant story is that property rights evolve as a result of entrepreneurial initiative.

"It is important to recognize that any case of external benefits or costs provides fertile ground for an entrepreneur who can define and enforce property rights" (21). Again we are reminded that "even externalities offer profit niches to the environmental entrepreneur who can define and enforce property rights to the unowned resource and charge the free-riding user" (23). Clearly, it is the entrepreneur who, in the authors' view, both defines and enforces property rights. Further clarification is provided by a historical example of how this was done in the Far West:

> I, the undersigned, do hereby notify the public that I claim the valley, branching off the Glendive Creek, four miles east of the Allard, and extending to its source on the south side of the Northern Pacific Railroad as a stock range.—Chas. S. Johnson [no date given]

Thus did Mr. Johnson define his property rights. Exactly how he intended to enforce those claims against other strong-willed individuals he left to the reader's imagination. Anderson and Leal also leave to our imagination just how this example might be replicated today. My imagination suggests the following: "I, the undersigned, do hereby notify the public that I claim all the air and space above my house. Trespassing airplanes and birds whose owners have not paid for the right of transit will be shot down by one of two Exocet missiles that are also my property." Have I hereby become an environmental entrepreneur?

Is there no role at all for government in defining and enforcing property rights? Not in Chapters 2 and 3. However in Chapter 11 a more reasonable line is offered. We are told that: "As a definer and enforcer of property rights, government has an important role to play in this free market solution. Just as states registered cattle brands and prosecuted rustlers, the government could move us in the direction of free market environmentalism if it would register pollutants, monitor the flow of pollutants in the atmosphere, and enforce liability for damage" (166). Some rather important functions of the entrepreneur in Chapters 2 and 3 have in Chapter 11, quite reasonably, but without explanation, been transferred to the government.

We are told that fencing the atmosphere "to solve global commons problems" seems as unfathomable today "as fencing the range seemed in 1840" (165). What barbed wire did for enclosing the range "lasime-

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trics" (166, presumably referring to a laser-based surveying technology) will do for enclosing the atmosphere. I doubt it. People in 1840 knew all about fences. Barbed wire was a cheap fencing material, not a conceptual breakthrough. Even with lasimetrics, apportioning the atmosphere into private property remains unfathomable to anyone who tries to think it through.

The authors' "quite simple" (165) example for making clear the benefits of free-market environmentalism in solving the problem of greenhouse gas emissions is privatization of highway ownership. Strict liability enforced on the highway owner would give the owner an incentive to control emissions (charge users accordingly), or to refuse access to high-polluting cars. No mention is made of the army of private guards and emissions inspectors required, nor the time lost in inspection and litigation. More important, one might have expected "free-market" economists to be a bit more sensitive to the problems of monopoly ownership—or are we to envision many parallel highways competing for the motorist? And if they compete, might they not compete by fudging emissions standards? We are back to government inspectors. Indeed we never got away from government since the emission standards have to be defined and enforced, and presumably this requires government—although, as we have seen, Chapters 2 and 3 leave these functions to the entrepreneur. Would not a stiff (Pigouvian) energy tax levied at the mine mouth or wellhead be a lot simpler?

Generalizing the "Bubble" Concept

Not all policies offered are as weird as those discussed above, which the authors offer as solutions to the "tougher problems" (154). It is not clear that they consider the tougher problems to be real since they voice the suspicion that global warming may be "hot air" (159) or, worse, a fear "used to drive sustainable development policies where nearly all resource use would be controlled by government" (161). However, for more tractable problems, the paradigm policy of their free-market environmentalism—the bubble concept, which limits aggregate polluting emissions in a region and then allows market exchange to allocate the quota among alternative users—is one that I wholeheartedly support. With obvious caveats about political acceptability, I would even suggest applying the same scheme to population control by setting up tradeable reproduction rights corresponding in

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aggregate amount to replacement fertility, as proposed originally by Kenneth Boulding.[3] Anderson and Leal apparently see no connection between population growth and environmental problems so they do not discuss this application of the basic institution they advocate.

I make a point of mentioning Boulding's unpopular suggestion for two reasons. First, I believe that it was the earliest exposition of the economic logic underlying the bubble concept—that is, conformity to an aggregate limit with the minimum sacrifice of freedom and variability at the individual level. Boulding applied it to the area where it was politically least likely to be accepted. Second, the omission of population from a book on the environment has to be noted. All we are given by way of explanation is a reference to Julian Simon and the statement that "the human mind . . . has allowed us to avoid Malthusian cycles" (2). Some of "us," some of the time, have indeed avoided the Malthusian trap, but currently half the world is caught in it. As will be discussed later, free trade makes it impossible to avoid spillovers from those caught in the Malthusian trap.

The authors recognize, but do not emphasize, that the bubble concept and its variants absolutely require an initial social, collective decision limiting the aggregate use of an environmental source or sink to an amount judged to be within environmental carrying capacity. They feel that it would be much better if the scale could be set by some kind of individualistic (Coasian) bargaining process rather than by collective decision. Their hope or faith is that the requisite property rights will somehow evolve in a way that makes this feasible (147). In the meantime they reluctantly accept the political decision limiting scale as a necessary evil. A discussion of the roles of private versus public property in a broad Coasian framework would have been interesting, as would a discussion of the relative advantages of the Coasian and Pigouvian strategies of internalization. But, as lamented earlier, neither Coase nor Pigou even figures among the references.

Once scale has been set, another political decision must be made about the initial distribution of this newly created right among users. It may belong to the government initially, and then be allocated by auction to private users, who are in turn free to reallocate by sale or gift. Or the initial distribution may be to private parties, but this requires a political decision regarding to whom it should be given. Only after the community or the state establishes the right, and provides an initial distribution of its ownership, do we arrive at the "free" market and its ability to reallocate the initial distribution. I think it would be more descriptive to call this "*constrained* market environmen-

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talism" (ecologically and ethically constrained), but the authors want to call it "*free* market environmentalism." The important thing, in my view, is to separate cleanly the collective decision on optimal (sustainable) scale of use of resources from the individualistic market decisions governing the optimal allocation of that total amount of resources among alternative uses. By scale I mean total resource use (population times per capita resource use); by sustainable scale I mean one that is within environmental carrying capacity.

Allocation, Distribution, and Scale

The great virtue of the tradeable permits scheme is that it forces us to distinguish three independent policy goals and to recognize that they require three independent policy instruments.[4] The goals are: (1) *allocation*—the division of the resource flow among alternative product uses; (2) *distribution*—the division of the resource flow, embodied in products, among different people; (3) *scale*—the total volume of the resource flow, the matter-energy throughput taken from the environment as low-entropy resources and returned to the environment as high-entropy wastes. Scale is relative to environmental carrying capacity.

Economic theory tells us that relative prices formed by supply and demand in competitive markets lead to an efficient allocation. Economic theory also tells us that there is a different efficient allocation for every initial distribution of ownership, so that justice or fairness of distribution is a separate goal from efficiency and requires a separate policy instrument—transfer payments such as welfare, social insurance, inheritance taxes, and so on. As for scale, it is largely ignored by standard economic theory, which has implicitly assumed that environmental sources and sinks were infinite. Consequently there is in economic theory no policy instrument for keeping scale within carrying capacity—nothing analogous to the Plimsoll line or load limit mark on a ship. If theorists recognize sustainable scale as a goal, then they are in the position of trying to kill three birds with two stones.

But the third stone, the scale limit, the economic Plimsoll line,[5] is evolving in practice ahead of theory. The beauty of the tradeable permits scheme is that *first* we must face the scale question and draw a Plimsoll line at the amount of aggregate pollution (or depletion) that is ecologically sustainable. Second, rights to pollute (or deplete) up to that limited amount must be distributed in some fair manner. Only

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after these two political steps can market trading attain the efficient allocation. The market is "free" only after its ecological and distributional boundaries have been politically established.

The distribution and scale questions are just as much *economic* as the allocation question in that they all involve the comparison of costs and benefits. But the dimensions in which costs and benefits are defined are different in each of the three cases. Allocative prices do not measure the costs and benefits of scale expansion, nor do they measure the costs and benefits of a more equal distribution of income or wealth. We have three different optima requiring three different policy instruments. In each case an optimum is formally defined by the equality of falling benefits and rising costs at the margin. But the definitions and measures of costs and benefits in each of the three cases are different because the problems to whose solution they are instrumental are different. The relative prices of shoes and bicycles are instrumental in allocating resources efficiently between shoes and bicycles, but are clearly not instrumental for deciding the proper range of inequality in wealth and income, nor for deciding how many people consuming how much per capita of natural resources gives the optimal scale.

Distribution and scale involve relationships with the poor, the future, and other species—relationships that are more social than individual in nature. *Homo economicus*, whether the self-contained atom of methodological individualism or the pure social automaton of collectivist ideology, is in either case a severe abstraction. Our concrete experience is that of "persons in community." We are individual persons, but our very individual identity is defined by the quality of our social relations. Our relations to each other are not just external, they are also internal—that is the nature of the related entities (ourselves in this case) changes when relations among them change. We are related not only by the external nexus of individual willingnesses to pay for different things, but also by relations of kinship, friendship, citizenship, and trusteeship for the poor, the future, and other species. The attempt to abstract from all these relationships a *Homo economicus* whose identity is constituted only by individualistic willingness to pay, is a distortion of our concrete experience as persons in community—an example of what A. N. Whitehead called the "fallacy of misplaced concreteness."[6]

The prices that measure the opportunity costs of reallocation are unrelated to measures of the opportunity costs of redistribution, or of a change in scale. Any tradeoff among the three goals (e.g., an improvement of distribution in exchange for a worsening in scale or

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allocation, or a more efficient allocation resulting from the harsher incentives of a less equal distribution of income) involves an ethical judgment about the quality of our social relations, rather than a calculation of our willingness to pay. The contrary view—that this choice among the three separate policy goals, and consequently the social relations that help to define us as persons—should be made on the basis of individual willingness to pay, just as the allocative tradeoff between chewing gum and shoelaces is made, seems to be dominant in economics today. It is part of the retrograde modern reduction of all ethical choice to the level of personal tastes weighted by income.

It is much easier to correct the misunderstanding of the "green critics" of tradeable permits, who condemn them as "licenses to pollute." They fail to recognize that the main point is to limit aggregate pollution to a sustainable level, and that the market is only allowed to allocate that fixed level, in an efficient manner, subject to a socially decided initial distribution. One reason the greens have not understood this is that economists have downplayed the scale and distribution parts of the tradeable permit plans, focusing almost exclusively on their allocative superiority to command-and-control regulatory standards.

Alternative Cattleman's Paradigm: Carrying Capacity and Sustainable Development

"Carrying capacity," like branding and fencing, is also a cattleman's term relevant to the Far West, but unlike "branding" it does not appear in the book's index, and certainly does not haunt the authors' imaginations in the way that branding and fencing do. In fact the book's concluding section on sustainable development leads one to conclude that the authors reject the concept of carrying capacity, or at least that they refuse to generalize it in the way they do branding and fencing. How they can advocate tradeable permits as the main policy of "free market environmentalism" without discussing carrying capacity is an inconsistency they never attempt to resolve.

The authors claim that sustainable development, in its "more extreme versions" (168), means that nonrenewable resources should never be extracted. This is simply fatuous. No reference is provided to anyone holding such a position. The principle actually put forward by many advocates of sustainable development is that nonrenewable resources be depleted at a rate equal to the rate at which renewable

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substitutes are developed. Differences emerge about how broadly or narrowly to define substitute (e.g., most would consider an increase in copper recycling as a substitute for the discovery of more copper). Quite sophisticated accounting principles for separating the rents from nonrenewable resource extraction into a capital component (to be reinvested in renewable substitutes) and an income component (available for current consumption) have been developed.[7]

Even if there were a nonrenewable resource for which there are no substitutes, no one advocates leaving it forever in the ground, although many certainly do advocate sharing it over some number of generations greater than one. Anderson and Leal see no need for such sharing since they advocate Barnett and Morse's[8] intergenerational invisible hand, the doctrine which holds that "by devoting itself to improving the lot of the living . . . each generation . . . transmits a more productive world to those who follow." How fortunate! We can forget about intergenerational sharing and maximize for the present, just as we can forget about intragenerational sharing and maximize for ourselves. In both cases we are comforted by the augmented invisible hand that transforms private (and present) greed into public (and future) benevolence. We have here, in T. S. Eliot's mordant words, "a system so perfect that no one needs to be good."

In contrast to the "intergenerational invisible hand" consider the statement by Nicholas Georgescu-Roegen that, "Every time we produce a Cadillac we irrevocably destroy an amount of low entropy that could otherwise be used for producing a plow or a spade. In other words, every time we produce a Cadillac we do it at the cost of decreasing the number of human lives in the future."[9]

Just why free-market environmentalists believe that Barnett and Morse are right and Georgescu-Roegen is wrong would have made for an interesting discussion. But Georgescu-Roegen joins Coase and Pigou in the distinguished company of authors of unnoticed classics which Anderson and Leal might have used to deepen and enrich their analysis.

The authors see no possible conflict between economic growth and the environment: "Higher incomes allow us to afford more environmental quality in addition to material goods" (171). Everyone will readily agree that if we are richer, then all our problems, including environmental ones, will be easier to solve. That is hardly in dispute. What is at issue is whether economic growth at the present margin, as currently measured, is really making us richer. If the marginal production benefits of growth are less than the marginal environmental costs

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made necessary by the production increase, then growth as currently measured is making us poorer, not richer. The authors seem blind to very possibility of growth that costs more than it is worth at the margin, just as they seem blind to any possible intergenerational conflict of interest.

Free Market and Free Trade?

What does "free market environmentalism" have to say about free trade and the environment? Nothing, although free trade is certainly an important part of the overall free-market position, allowing the export of production in exchange for the import of carrying capacity from other countries. This is a critical omission. Suppose a country follows the path of internalizing external costs (environmental and social) into prices that consequently tell the truth, insofar as possible, about real sacrifices. Whether this is done by Pigouvian or Coasian strategies does not matter. Now imagine free trade (including free capital mobility) with a country that allows firms to externalize such costs. The firms in the first country with truthful, higher prices will be undercut by firms in the second country with deceptive, lower prices. Should not the first country be allowed a countervailing tariff to protect, *not an inefficient industry, but an efficient national policy of full-cost pricing*? So far the free traders, including GATT, and the free-market environmentalists, have not been able to resolve this issue. Anderson and Leal simply ignore it.

This defect may stem in part from not recognizing the population problem. Free trade between high-wage and low-wage countries will tend to equalize wages, and if capital is mobile internationally this tendency will be very strong. Low-wage countries tend to be already overpopulated and to have high rates of population growth, especially among the laboring class. With free trade and capital mobility the wage-reducing consequences of high population growth in low-wage countries will spill over into high-wage countries. The effect on wages and profits in high-wage countries will be the same as under free migration of labor—wages will fall as profits rise. If a country wants to follow a high wage policy at home and avoid extreme inequality in incomes, it cannot, in effect, erase its borders with low wage countries.[10] It is unavailing to appeal to the doctrine of "comparative advantage" and its comforting conclusions because that doctrine is explicitly premised on the immobility of capital internationally.[11]

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International competition to lower costs can be "efficiency-increasing," but it can also be "standards-lowering." The standards that get lowered in free trade with free capital mobility are mainly the standards of living of workers, but also include environmental standards, health insurance, safety standards, and so on. Anderson and Leal are not alone in ignoring these issues that have been studiously avoided by mainstream economists.

* * *

Anderson and Leal use the partial truth that full-cost pricing is a good thing in order to bludgeon other partial truths that are not really contradictory to the piece of the truth thát they have managed to grasp. Where full-cost pricing is in contradiction to other parts of the free-market ideology, as with free trade, they ignore the issue. In this case, the market needs protection from its ideological friends more than from its leftist enemies. The latter are now justly discredited. The clear and present danger to the market comes from the exaggerated enthusiasm for a world in which everything is either fenced or branded and bought and sold for private profit by environmental entrepreneurs bent on defining and enforcing "their" property rights. With no collective decisions or community consensus about ecological limits to economic expansion and ethical limits to the concentration of ownership of ecological space, we will spend all our energies in litigation to "evolve" and defend our individual property rights against the conflicts generated by continued economic expansion within a finite ecosystem. The market as an institution for allocating scarce resources will be deprived of the sustainable ecological context in which its virtue, efficiency, can shine. An efficient servant will become an unjust and unsustainable master.

NOTES

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9. Nicholas Georgescu-Roegen, "The Entropy Law and the Economic Problem," in Herman E. Daly, ed., *Economics, Ecology, Ethics* (San Francisco: W. H. Freeman and Co., 1980).
10. William Greider, *Who Will Tell the People?* (New York: Simon and Schuster, 1992), ch. 7.
11. See reference in n6 above, especially ch. 11.

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Paul Heyne

FOR THE COMMON GOOD?

Herman E. Daly, an economist, and John B. Cobb, Jr., a theologian, have teamed up to write a book that calls for a radical restructuring of the way we organize production and exchange. They believe that the pressure of human population and production on the biosphere will soon compel thoroughgoing changes in the way we live. They also believe that we would want radical changes, with more emphasis on community and less on the pursuit of individual advantage, if we correctly understood our own natures. Because they believe that the academic discipline of economics has systematically blinded us to the social and biological realities of our situation, they focus on the criticism and reform of economics. An unfortunate result is a failure to learn what economics could tell them about the evolution and functioning of the societies they want to transform.

"In our time," Herman Daly and John Cobb begin, "it is the facts themselves that are more than a little wild and that constitute an assault on unthinking economic dogma" (*For the Common Good* [Boston: Beacon Press, 1989], 1). Thus they identify the villain at the outset: *unthinking economic dogma*. Part 1 of their four-part book is titled "Economics as an Academic Discipline" and offers a sweeping criticism of contemporary economics, focused on its flawed approach to the matters with which it deals. Part 2, titled "New Beginnings," continues the assault on economics and suggests some directions in which the disci-

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pline will have to develop if economists are going to provide useful understanding and guidance. The reader is halfway through the book before encountering "Policies for Community in the United States" in Part 3. The concluding Part 4 is titled "Getting There."

The Concern for Community

Despite the impression that the first two pages create, Daly and Cobb have not written a book about environmental problems. The opening page presents "the wild facts" as reported by the Worldwatch Institute: There is a hole in the earth's protective shield of ozone, the greenhouse effect is causing global warming and drought, biodiversity is declining, and acid rain is killing forests and lakes. Page 2 tells us why all this is occurring: "All these facts appear to be related in one way or another to one central underlying fact: the scale of human activity relative to the biosphere has grown too large." The connection between "the growth economy and the physical limits of the ecosphere," the authors add, "is at the heart of our project."

Whether that's true or not depends on how one understands the "heart" metaphor. The authors are absolutely convinced that the earth has too many people and too many activities that deplete the stock of natural resources, and this conviction shapes and informs the entire book. But the conviction functions as an assumption, not a conclusion, largely because, to Daly and Cobb, the fact is too obvious to be denied—except, perhaps, by people like economists who have been blinded by their own spectacles. The real heart of the authors' project, if heart has to do with inspiration, is a concern for community, as the subtitle of *For the Common Good* accurately indicates: *Redirecting the Economy toward Community, the Environment, and a Sustainable Future.* Daly and Cobb claim that a sound environment and a sustainable future will be desirable side effects of an economic system reoriented to serve community.

They start from the premise that we *cannot* continue much longer along our present path. By their calculations, human population doubled from 1950 to 1986 while gross world product and fossil fuel consumption each quadrupled (2). Growth rates such as these are obviously not sustainable for very long.

> The global system will change during the next forty years, because it will be physically forced to change. But if humanity waits until it is physically compelled to change, its options will be few indeed. None of them will be

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> attractive. If it changes before it *has* to change, while it can still choose to change, it will not avoid suffering and crises, but it can be drawn through them by a realistic hope for a better world. (21)

What would the better world look like for which Daly and Cobb are hoping? It would above all else be a world in which the welfare of the community was the conscious aim of action, in which individuals would promote their own interest most effectively by pursuing the interest of the community with which they identify. Exactly what this might mean begins to emerge in the various chapters of Part 3 on "Policies for Community in the United States."

The argument that leads up to Part 3 is an odd one. Daly and Cobb maintain that the dogmas of professional economists have caused the earth to warm, biodiversity to decline, shopping to become the national pastime, and community to break down at all levels.

They aim four principal charges at the discipline of economics, all of them instances of the *fallacy of misplaced concreteness*. Alfred North Whitehead invented this term to describe a mistake that he thought characterized much of modern thought. Daly and Cobb quote the definition or description that appears in Whitehead's most systematic metaphysical work, *Process and Reality*. The fallacy consists of "neglecting the degree of abstraction involved when an actual entity is considered merely so far as it exemplifies certain categories of thought." They explain as follows: "It is the fallacy involved whenever thinkers forget the degree of abstraction involved in thought and draw unwarranted conclusions about concrete actuality." To support their charge against economics, they invoke the authority of Nicholas Georgescu-Roegen, who once wrote: "It is beyond dispute that the sin of standard economics is the fallacy of misplaced concreteness." And they quote Whitehead once more:

> The methodology of reasoning requires the limitations involved in the abstract. Accordingly, the true rationalism must always transcend itself by recurrence to the concrete in search of inspiration. A self-satisfied rationalism is in effect a form of anti-rationalism. It means an arbitrary halt at a particular set of abstractions. (36–7)

How does economics commit the fallacy of misplaced concreteness? Or, as Daly and Cobb put it, "What is the set of abstractions that political economy has riveted on economic thought and at which it has come to a self-satisfied halt?" Here is their summary of the indictment:

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> One of the most important is the abstraction of a circular flow of national product and income regulated by a perfectly competitive market. This is conceived as a mechanical analog, with motive force provided by individualistic maximization of utility and profit, in abstraction from social community and biophysical interdependence. What is emphasized is the optimal allocation of resources that can be shown to result from the mechanical interplay of individual self-interests. What is neglected is the effect of one person's welfare on that of others through bonds of sympathy and human community, and the physical effects of one person's production and consumption activities on others through bonds of biophysical community. Whenever the abstracted-from elements of reality become too insistently evident in our experience, their existence is admitted by the category "externality." Externalities are ad hoc corrections introduced as needed to save appearances, like the epicycles of Ptolemaic astronomy. Externalities do represent a recognition of neglected aspects of concrete experience, but in such a way as to minimize restructuring of the basic theory. As long as externalities involve minor details, this is perhaps a reasonable procedure. But when vital issues (e.g., the capacity of the earth to support life) have to be classed as externalities, it is time to restructure basic concepts and start with a different set of abstractions that can embrace what was previously external. (37)

What Does the Concept of the Market Leave Out?

Daly and Cobb argue that a prime example of economists' misplaced concreteness is their notion of "the market." They preface their critique with several pages of Hayekian praise for the power of the market and its ability to create a spontaneous order out of independent, decentralized decisions. "If one dislikes centralized bureaucratic decision making," they assert,

> then one must accept the market and the profit motive. . . . We have no hesitation in opting for the market as the basic institution of resource allocation. The alternative to capitalism and socialism that we will propose later on in this book is not intended as an alternative method of allocating resources, for on this issue we side unequivocally with capitalism. (48–9)

Why then do they cite economists' concept of the market as a fallacy? It is because "the market as a category of economic thought abstracts from the community and the biosphere." (51) It does so by attaching the label "externality" to considerations that are too important to be treated as external to the model. Daly and Cobb want the community to incorporate into the prices paid for all commodities the *full* value of *all* the sacrifices required to produce the commodities,

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something that they believe the political community can do more effectively than the market does it.

Economists would certainly want to ask exactly how this is going to be accomplished; but since they would not object to the principle, where is the fallacy? That never becomes quite clear, unless the fallacy is contained in the conclusion that the market can ordinarily achieve this full incorporation more accurately and effectively than any other agent of the community. A market system will require those who wish to use resources to pay the owners of those resources the full value of all the sacrifices that will be entailed by their use. The market fails to enforce this requirement only when there is no owner or no clearly defined owner, as in the case of such common-property resources as the air. The remedy in such cases is a more adequate specification of property rights, not an abandonment of the market. The political community may be called upon to undertake this clarification of property rights; but it will do so to improve the functioning of the market, not because it can somehow incorporate all costs into prices more adequately than the market does the job.

Daly and Cobb also complain that while the market solves the allocation problem very well, by providing appropriate information and incentives, it ignores considerations of justice and provides no answer to the issue of optimum scale. The last is especially important for them. Economists, they say, have managed to avoid the question of appropriate scale either by viewing the economic subsystem as infinitesimally small relative to the total system or by viewing the economy as coextensive with the total system. This will not do in a world where human activity is pressing hard against the limits of the biosphere.

Whether or not the failure of economists to consider justice and optimum scale can usefully be described as a fallacy of misplaced concreteness, Daly and Cobb certainly call attention at this point to a pair of important issues that economists have generally ignored. When economists do take up the issue of justice, they usually treat it as exclusively a matter of income distribution, an approach that passes over the question of whether justice depends upon outcomes or upon procedures. (Is a game unfair when the final score is lopsided or when it is played unfairly?) The identification of justice with a particular pattern of income distribution also enables economists who want to talk about justice to do so without getting into any troublesome questions about community, a phenomenon that does not lend itself readily to analysis with the economist's tools.

The charge that economists neglect the question of optimum scale

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for the system as a whole is especially pertinent. Why economists do so and the extent to which this neglect contaminates the whole of their environmental analysis are questions to which we shall return.

Economists also commit the fallacy of misplaced concreteness, according to Daly and Cobb, when they measure economic success by gross national product or GNP per capita. Almost all economists, they say, view growth in GNP per capita as evidence of a healthy economy, and tend to forget that GNP is not a measure of welfare or well-being. Daly and Cobb are not satisfied with minor adjustments that would take more account of the neglected costs of GNP growth; they want a thorough recasting of the concept to recognize that the real national product and income is only what can be produced and consumed with no reduction in national wealth—such as a drawing down of the nation's stock of nonrenewable resources. The real national product, they insist, is the *sustainable* national product. And the more than 50-page appendix to their book is an attempt to construct an index of sustainable economic welfare.

We might all be wiser today if we had never acquired the habit of identifying "the economy" with GNP; but do economists really make the mistakes of which Daly and Cobb complain? Gross national product finds its principal use in macroeconomics, where its limitations are less important because those who employ it are more interested in *changes* in *whatever* it measures than in exactly what it does measure. Moreover, just about every introductory textbook points out that gross national product should not be identified with gross national welfare. It is true that some of the textbook authors go on to suggest thoroughly inadequate adjustments that they naively claim would transform GNP into GNW. But Daly and Cobb themselves try to construct an index of sustainable economic welfare in disregard of their own clear warning:

> Any measure would abstract from many features of actual economic welfare and its use would lead to ignoring the degree of abstraction involved. The very existence of a measure *invites* the fallacy of misplaced concreteness. (84)

The authors' third example of misplaced concreteness is the use of the "economic man" concept. "The most important abstraction basic to contemporary economic theory," they assert, "is that of *Homo economicus* from real flesh and blood human beings." There has been a good deal of speculation and controversy within economics in recent years as to just what economists are assuming when they employ the con-

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cept of *Homo economicus* in their work. Daly and Cobb ignore all of it and set up a *Homo economicus* with some major characteristics that I have never encountered in my reading. Take this one, for example:

> What is excluded from *Homo economicus* are concerns for other people's satisfactions or sufferings that do not express themselves as one's market activity. For example, *Homo economicus* takes no pleasure when a neighbor receives a gift from someone else or a promotion, or when a philanthropist endows a park for underprivileged children. This adds to the utility function of the philanthropist, but not to other members of the community. Similarly, *Homo economicus* is not envious of the neighbor's new car or pained by defeat in competition for an honor. *Homo economicus* knows neither benevolence nor malevolence in any of these instances, only indifference. (86)

Because contemporary economic theory takes so many different and even conflicting forms, it is hazardous to make any confident assertions about what economic theorists do and do not assume. But Daly and Cobb are undoubtedly correct if they mean to assert that economists pay much more attention to factors that can be conveniently incorporated into their preferred models of self-interested individuals interacting than they pay to considerations that resist this paradigm. *Community* just isn't in the working vocabulary of the prototypical economist; or, if it does appear, it appears with the direction, "See *interdependent utility functions*"—which are not the same thing at all.

"Too often economics has shaped its anthropology and its theories," Daly and Cobb contend,

> with an eye to "analytical convenience" rather than empirical warrant. As a result, policy decisions are determined by mathematical theorems whose virtue is their deductive fruitfulness rather than their connection to the real world. The abstraction has gone too far, and the practitioners of the discipline are too little aware of it. The fallacy of misplaced concreteness is too pervasive. (95–6)

Here the authors would seem to be simultaneously on target and wide of the mark. There are certainly plenty of economists more interested in deductive fruitfulness than the real world; but it does not follow that "policy decisions are determined" by this kind of work. Economists who are interested exclusively in the kind of formal theory to which Daly and Cobb refer either don't do policy analysis at all or shift to a different kind of analysis entirely when they want to have an impact on policy discussions. Kenneth Arrow is an excellent example. Most of the work for which Arrow received a Nobel prize

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could be described, at least by an unsympathetic observer, as "mathematical theorems whose virtue is their deductive fruitfulness rather than their connection to the real world." But Arrow has also written a substantial amount of economics that contains no explicit mathematical theorems, that abstracts from none of the considerations mentioned by Daly and Cobb, and that usefully illuminates the real world.[1]

The last of the book's chapters directed specifically at fallacies of misplaced concreteness criticizes the way that economists deal with land. Daly and Cobb's basic objection is that economists have too little respect for land, creation, the world, the environment, or earth. The "forces of nature," they aver, "have disappeared from view. Economics as a discipline floats free from the physical world" (99). And "policies derived from a discipline that knows nothing of the physical world are destructive of that world" (100).

They embed this argument in a lot of doctrinal history of uncertain relevance and dubious accuracy, but what it all seems to come to is the claim that capital and labor can make no net contribution to total product without an assist from natural resources. Thus:

> The notion of marginal product does not really make sense for capital or even labor once land is understood to include the flow of resources from nature. Marginal product only makes sense for resources. To calculate the marginal product of one factor requires holding the other factors constant. If labor and capital are held constant and the resource flow is increased, then it is possible to produce more output by working harder or more efficiently or for longer hours. [*But then labor is not held constant!* A quibble.] But if the flow of resource inputs is held constant, then there is nothing from which more output could be made, not even by working harder, more efficiently, or for longer hours. The law of conservation of matter-energy forbids increasing material output when material input (resources) is held constant. And to calculate marginal productivity of capital or labor requires holding the resource flow constant. (112)

Both in theory and in practice, the measurement of marginal products, or the incremental contribution resources make to production, has been generating controversy in economics for about a century. Daly and Cobb have added a new confusion by focusing exclusively on material output and material input and invoking a law of physics. Production in economics, however, is the production of additional value, not additional material; so their knock-down argument is not at all conclusive. Their point, however, does not need a knock-down argument. It is that economists have been insufficiently attentive to the constraints imposed on production by scarcity of natural resources.

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That is an interesting claim and one worthy of careful examination. It cannot be settled, however, by arguing about Christian versus Jewish attitudes toward the land or by resurrecting the strange ideas of the eighteenth-century Physiocrats, much less by attributing to contemporary economists an undue reverence for Descartes and Kant.

A principal issue at this point between Daly and Cobb and the economists whom they criticize is the extent to which human ingenuity can substitute for natural resources. They cite George Gilder and Julian Simon as politically influential economists whose views on this issue "illustrate in hyperbolic fashion the fallacy of misplaced concreteness." Here is Gilder, writing in *Wealth and Poverty*: "The United States must overcome the materialistic fallacy: the illusion that resources and capital are essentially things, which can run out, rather than products of the human will and imagination which in freedom are inexhaustible." They also quote from an interview with Simon: "You see, in the end copper and oil come out of our minds. That's really where they are" (109). Taken out of context, the latter statement is absurd. But in context, as a counterpoint to those who mistakenly suppose that all production is the using up of material things, Gilder and Simon have important points to make. The economist Richard McKenzie neatly makes one of those points in a recent essay on energy conservation:

> Interestingly, many common resources (for example, sand) are potential substitutes for oil, in ways not commonly recognized. Sand is used to make computer chips, which can be used for telecommunicating, which, in turn, has made work at home possible and has already made commuting to and from work uneconomical for millions of world citizens.[2]

If a barrel saved is equivalent to a barrel produced, then oil *can* "come out of our minds." Gilder and Simon, neither of whom could be classified as in the mainstream of economics on these issues, may well be exaggerating the power of knowledge to alleviate scarcities of material resources. The important questions remain: To what extent and where and how can we substitute knowledge for material resources?

New Beginnings

What do Daly and Cobb want to see done? The section of their book titled "New Beginnings" starts off by extending the critique of eco-

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nomics to the university and all its disciplines. They want to end the disciplinary organization of knowledge as practiced in the universities because it has produced excessively narrow specialization and excessive abstraction. "Disciplinolatry" is the dominant religion of the university, according to the authors, and it works against the broad human need for understanding. (125)

As for the discipline of economics, they want to shift its focus from "chrematistics" to "oikonomia." *Chrematistics* was Aristotle's contemptuous term for what he saw as an unnatural way to obtain wealth, which was to obtain it through trade. *Oikonomia*, on the other hand, he portrayed as a necessary and natural art, the art of household management, which has as its legitimate end the procuring of those goods that are necessary for life and useful for the household and the larger community. Modern economists, according to Daly and Cobb, have reduced oikonomia to chrematistics by taking exchange as the basic subject matter of their discipline. Daly and Cobb want exchange to have a limited role in the community, with the limitations set by the science of oikonomia.

As they see it, the science of oikonomia is necessary to establish the proper boundaries for exchange. Chrematistics is short-sighted; oikonomia takes the long-run view. Chrematistics generates all sorts of externalities; oikonomia has a broader view that incorporates relevant externalities. Chrematistics has no aim except the diverse interests of the exchangers; oikonomia works with the total needs of the community in mind.

An adequate science of economics, one that studies oikonomia and not mere chrematistics, will require an understanding of *Homo economicus* quite different from the one assumed by modern economists. Daly and Cobb believe that human beings are fundamentally social and that the science of economics should therefore be reorganized on the basis of a new concept of economic man as "person-in-community." My inability to recognize the *Homo economicus* that they present as the central actor in modern economists prevented me also from seeing what specific difference their concept of "person-in-community" would make for economic analysis.

Not every society is a community, as Daly and Cobb want to use the term:

> To have a communal character in this usage does not entail intimacy among all the participants. It does entail that membership in the society contributes to self-identification. We accept this requirement and add three

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> others. A society should not be called a community unless (1) there is extensive participation by its members in the decisions by which its life is governed, (2) the society as a whole takes responsibility for the members, and (3) this responsibility includes respect for the diverse individuality of these members. (172)

That brings the authors to their conception of "communities of communities" as an alternative to cosmopolitanism. They want small regions to have viable economies that interact with one another. Exchange will occur between the individual members of communities at the initiative of the individuals, but only within the boundaries established by the principles of oikonomia. Apparently communities will exchange with one another as entities, ideally under the framework of an arch-oikonomia that will (or should) evolve to provide oversight for the extended transactions of the trading communities (176–82). More on this in a moment.

The section of the book on "New Beginnings" concludes with a chapter urging respectful attention to those natural processes that provide the setting and establish the ultimate boundaries for social processes. Economic theory gets the blame for the present unhappy situation.

> Just as the absence of acknowledgment of community in economic theory has led to the destruction of human community in economic practice, so also the neglect of the physical world in economic theory has led to its degradation in economic practice. (190)

But Daly and Cobb want more than mere attention to natural resource constraints. They want attention paid to the biosphere for its own sake. We are not justified, they argue, "in rearranging the foundations of creation to better serve our own purposes." We must rather adapt our purposes to the creation's purposes—purposes whose exploration Daly and Cobb postpone to their concluding chapter on "The Religious Vision."

Commerce vs. Community

In Part 3 the reader finally discovers the root of the authors' dissatisfaction with economics. It is hostility to the market, their earlier endorsement of the market notwithstanding. The science of economics originated in efforts to understand *and defend* the workings of a society held together not by the visible hand of a political economist

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(an estate manager for the *polis*) but by the invisible hand of market competition. We might say that Adam Smith set out to construct a science of chrematistics and to demonstrate that, as far as the larger society was concerned, a science of oikonomia was not only unnecessary but positively harmful.

Daly and Cobb move in exactly the opposite direction because they want to halt the advance of what Adam Smith called "commercial society." "When the division of labour has been once thoroughly established," Smith wrote,

> it is but a very small part of a man's wants which the produce of his own labour can supply. He supplies the far greater part of them by exchanging that surplus part of the produce of his own labour, which is over and above his own consumption, for such parts of the produce of other men's labour as he has occasion for. Every man thus lives by exchanging, or becomes in some measure a merchant, and the society itself grows to be what is properly a commercial society.[3]

Daly and Cobb believe that commercial society undermines the community that an economic system must serve if it is to be "for the common good."

Up to a point, they are surely correct. Albert Hirschman set out a cogent analysis of the problem in his 1970 essay *Exit, Voice, and Loyalty*. When people can obtain whatever benefits of social cooperation they desire by threatening to walk across the street, they tend to do so rather than stay and argue for what they want. Given a choice, they prefer the "exit" option to the "voice" option. It seems a lot easier, much quicker, and entails less squabbling. And so social systems based on exit, which are essentially market systems, tend over time to displace systems based on voice, or political systems. But there is an unintended consequence. Social systems held together by "voice" generate among their members a degree of loyalty that is not characteristic of social systems coordinated by "exit." Voice generates a centripetal force among the members of a society and exit a centrifugal force. This is how market systems subvert community.[4]

The economist Kenneth Boulding had presented a similar idea several years earlier in an essay contrasting social systems based on exchange, on integration, and on threat. The relevant contrast for our purposes is the contrast between exchange systems and integrative systems. Exchange systems are coordinated by the principle, "If you will do this for me, I will do that for you." The integrative relationship, as described by Boulding,

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> involves a "meeting of minds" (that is, a convergence in the images and the utility functions of the parties toward each other). . . . The integrative relationship is itself a complex of many different types of relationship, such as, for example, the teaching-learning relationship between the teacher and the student, the persuasive relationship between an orator and his audience or between an advertiser and his addressees, and a great variety of relationships, such as respect, affection, love, and so on, which leads towards similarity in value and utility functions over the domain of various states of the world in the minds of the parties concerned. Economists pay very little attention to these integrative systems, and indeed have generally tended to assume, what in the dynamic sense is sheer nonsense, that utility functions are given—whereas, as Veblen pointed out, they are the product of human interaction. I would add that they are especially the product of the integrative relationships in society.[5]

Daly and Cobb make no use of Boulding's contrast between exchange systems and integrative systems or of Hirschman's contrast between exit and voice, despite the fact that the latter, at least, has inspired a substantial amount of work among economists. They depend instead on the mere assertion that there must be political control over those who control the economy.

The breadth and depth of their hostility to free exchange becomes clearest when Daly and Cobb attempt to construct a case for autarky within economies with as few as 10,000 or possibly only 5,000 members. Their argument relies on *Human Scale*, a 1986 book by Kirkpatrick Sale,[6] who argued that a community of 10,000 people could economically produce everything it really needs. It could not produce tanks or planes or automobiles; but these are not real needs. It could produce most modern comforts. Here is Sale's argument, as quoted by Daly and Cobb:

> A community of 5,000 or 10,000 takes on the stature necessary for real economic independence—as indeed, if we needed reassurance, the greater part of human history has demonstrated. At that size . . . agricultural self-sufficiency and community energy systems are most economical and efficient, and at that level the labor force available for the rest of the community (if it approximated current American percentages) would amount to between 2,000 and 4,000, divided about evenly between manufacturing and services. Now if we take the figures for current American manufacturing, we can see how many people it might take (both front office and production) to operate a plant in the sort of basic industries an independent community might require:

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Industry	*Workers Per Plant*
Textiles	132
Apparel	56
Lumber and wood products	29
Furniture and fixtures	50
Paper and allied products	104
Soap, cleansers, toilet goods	43
Stone, clay, and glass products	39
Primary metal industries	163
Fabricated metal products	50
Machinery (except electrical)	45
Electrical and electronic equipment	135
Motorcycles, bicycles, parts	81
Instruments and related products	75
Total Manufacturing Employment	1,002

> In other words, using current standards, a thousand people could operate one plant in each of the thirteen basic manufacturing categories—and as we know, those current standards are far bigger than the optimum for either efficiency or humanity and they include some truly behemothian places. In a rational economy it would no doubt be possible to reduce those sizes by half, but even if it were by no more than a quarter, that would still mean a community of 10,000, with 2,000 factory workers, would be able to staff *three plants* in each of these basic categories—enough to supply a small population with practically all of its manufacturing needs and allow it considerable diversity as well. (294–5)

The reader who thinks this sounds eminently sensible should ask a few concrete questions. Which of these "basic manufacturing categories" will produce antibiotics and the enormous variety of other life-prolonging drugs we now have available? Will the three "instruments and related products" factories be able to supply their communities with high-speed dentist drills—keeping in mind that the manufacture of such items presupposes the prior manufacture of a lot of other "instruments and related products" to be used as capital goods? Daly and Cobb say that "Sale is not proposing the abandonment of most modern comforts"; if so, that would be because he has not begun to see how complex the process of producing modern comforts really is. No doubt comfortable beds—frames, box springs, and mattresses—could be produced in a "furniture and fixtures" factory of fewer than 50 workers, given all the necessary inputs, including the requisite tools. But where would these inputs come from? Could they, too, all be produced within these small communities of 5,000 or 10,000 people? Would the people in these autarkic communities have ready access to

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light bulbs, sewer pipe, classical music, weather-resistant roof shingles, herbal teas, and enough good authors to stimulate and satisfy them if the three "electrical and electronic equipment" factories proved unable to produce color television sets? Where would CAT scanners be produced? And how many *different* "fabricated metal products" will the three factories in this category have to produce if the community is going to retain "most modern comforts"? (Start the long list by looking in your own kitchen.) Daly and Cobb have allowed Sale to seduce them into committing a gross fallacy of misplaced concreteness.

Foreign Trade vs. Community

Daly and Cobb want all trade to be subject to the overarching control of an appropriate political body. That is the explanation for their quite extraordinary hostility to trade between the citizens of different nations. Because no world government has the ability to control such trade, it becomes trade between individuals seeking only their own advantage. There is, the authors assert, an "enormous breach of community implicit in modern free trade," (200) because the individual's advantage is in fact regularly obtained at the expense of others in the community.

The effect of free trade is to equalize the prices of traded commodities (net of transportation costs) and to push toward equality the prices paid to those who produce the commodities. This means that free trade reduces wages in high-wage countries. It simultaneously raises wages in low-wage countries, but Daly and Cobb insist that the large and growing populations of most low-wage countries guarantee that the latter effect will be small. "By making the world of separate national communities into a single, common, overpopulated labor pool in the name of free trade, the United States would compete away the high standard of living of its working class—the majority of its citizens." (220)

That will be only the beginning.

> A high standard of living is not the only good thing that depends on community. Once community is devalued in the name of free trade, there will be a generalized competing away of community standards. Social security, Medicare, and unemployment benefits all raise the cost of production just like high wages, and they too will not survive a general standards-lowering competition. Likewise, the environmental protection and conservation standards of the community also raise costs of production and will be

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> competed down to the level that rules in overpopulated Third World countries. Free trade, as a way of erasing the effect of national boundaries, is simultaneously an invitation to the tragedy of the commons. Few people would advocate free migration because they can intuitively see the tragic consequences. Free trade and free capital mobility have exactly the same consequences for wages and community standards, but are widely advocated in the false belief that comparative advantage guarantees mutual benefit. (220–21)

In reality, according to Daly and Cobb, comparative advantage does not guarantee mutual benefit because the concept supposedly does not apply to a world characterized by capital mobility. I find this the most puzzling feature of the entire book. The authors attack the principle of comparative advantage repeatedly and relentlessly.[7] But what they attack is a strange and idiosyncratic version of the principle.

Although it was first enunciated by economists early in the nineteenth century to explain the relative prices of internationally traded goods, the principle of comparative advantage is more fundamentally a way of expressing the general concept of cost that reigns in contemporary economic theory. This is the concept of opportunity cost, which says that the cost of any action or decision is the value of the opportunity that will be sacrificed if that action or decision is implemented. The principle is applicable whether capital is mobile or immobile. Daly and Cobb have picked up the wrong end of the stick in interpreting David Ricardo, an early formulator of the principle. Ricardo's problem was that he had no theory of relative price determination in a domestic economy; for his purposes, it was enough to assume that competition would equalize the prices of goods that had the same costs of production. Between countries, however, prices might differ indefinitely, insofar as the immobility of some resources prevented the competitive process from bringing them into equality. Ricardo devised the principle of comparative advantage (often called the principle of comparative costs) to explain the outcome of the competitive process in a world of partially immobile resources. Being an acute economic analyst, he hit upon the principle that became the *general* explanatory principle about 75 years later. The principle asserts that the lowest-cost producer of any good, and hence the producer who offers the lowest price, will be the one who is able to produce it at the smallest sacrifice in terms of the value of other goods not produced as a consequence.

The principle of comparative advantage never did imply, as Daly and Cobb seem to think it does, that trade that benefits the trading

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individuals necessarily benefits "the whole society," or even that the gains to some in the society will be greater than the losses suffered by others. Some economists, in their zeal for the cause of free trade, have indeed used the principle to extract these implications, but they are misusing it. The concept of opportunity cost that undergirds the principle of comparative advantage offers no satisfactory procedure for weighing the benefits and costs of different people so that they can be compared. We can calculate *in monetary values* the benefits to American motorists of free trade in Japanese cars and the corresponding costs to employees and owners of American automobile companies, but economic theory offers no grounds for the assertion that $1.01 of benefit to a Minnesota motorist justifies $1.00 of cost to a Michigan manufacturer.[8]

Have Daly and Cobb simply wasted all those pages on which they flail the principle of comparative advantage? From a tactical standpoint, perhaps not. They have certainly left the impression that the case for free trade, underneath all its pretended sophistication, rests fundamentally upon a discredited dogma. While that might well be an effective rhetorical ploy, it evades the crucial issue, which is whether governments should protect the interests of some members of the society by preventing other members from exchanging with foreigners. Daly and Cobb have no doubt at all that it should. They would prefer every community to be self-sufficient in "necessities" so that no community has to be dependent on any other, because dependence, in their judgment, surrenders authority to outsiders. They dislike even domestic capital mobility, because they believe that it forces states and local communities to "bargain shamelessly to attract new plants or keep old ones" (293). They want all production to be on a small scale, to be for local markets if at all possible, and to employ simple production techniques for a people who have been reoriented through "a massive program of education" to prefer rural to urban life (277).

A healthy community, they insist, will be a relatively self-sufficient one (268). The size of the self-sufficient community will depend on how far personal humanity or political responsibility can be counted on to care for the members, which implies nothing larger than the national community. But a national government cannot be counted on to respond sensitively to the needs of all regions, so regional communities with their own relative self-sufficiency are also desirable. Daly and Cobb like the idea of about a dozen distinct "bioregions" within the United States, each pursuing at a minimum the most basic

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self-sufficiency, which is self-sufficiency in food production. Will this return us to the days of strictly seasonal fresh fruits and vegetables? Not necessarily. Daly and Cobb learned from an article in the *Arkansas Gazette* that farmers can grow hardy varieties in the cooler months and heat-tolerant ones in the summer and employ mulch and cold frames to extend the growing season for many crops. They concede, however, that "the idea of localization of food production is not absolute. At a price food can still be brought from around the country and the world" (279–80). Presumably, however, it will be brought in only when the community approves, not when some disruptive citizen with more money than community loyalty gets a craving for fresh tomatoes.

Despite the brief but eloquent praise of the market in Chapter 2 and the authors' insistence that they "have no hesitation in opting for the market as the basic institution of resource allocation," they propose to do away with the institutions upon which it depends: reasonably well-defined and well-settled property rights along with very limited restrictions on the exchange of those rights. Daly and Cobb call explicitly for political control of economic power at every level, because they believe that a principle of free exchange would affirm the right of individuals to subvert their communities. They do not seem to realize that in affirming the continuous right of political authorities to decide which trades will and will not be permitted, they have made markets in any recognizable sense impossible. The good society that they envision is thoroughly politicized. And a thoroughly politicized society is one in which markets cannot flourish.

Why do the authors believe that the politicized societies for which they call will be able to create community, care for the environment, and provide their members with most of the comforts of modern life? Has the experience of Eastern Europe and the U.S.S.R. taught them nothing? They would probably claim that the failures of socialism are irrelevant to their proposals because they are not advocating socialism. But what is socialism if it is not an affirmation of the political community's right to control every voluntary transaction among individuals for the sake of society as a whole? And is that not precisely what Daly and Cobb insist upon? It makes no sense to condemn the socialism that has failed so monumentally in this century to create community, care for the environment, and produce elementary comforts while affirming the very vision that generated that socialism. There is nothing in this book to indicate that the authors have reflected for a moment on

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all the ways in which political visions have come to ruin when they encountered the concrete reality of human limitations.

The Ivory Tower

For the Common Good is in fact filled with evidence that its authors have paid almost no attention to actual human societies. This is an academic book in the worst sense of that term. The authors almost never get out of the academy, the artificial world of college professors. It is absurd to claim that the problems of our society have been created by the fallacies of social theorists, especially economists, and can be remedied by reforming university disciplines. Heaven knows that academicians do many silly and irresponsible things. But one of the absurd things they do is overrate their own importance by exaggerating the significance of their theoretical controversies. Only in academia could anyone take seriously the claim that our environmental problems have been created or even seriously exacerbated by fallacies of misplaced concreteness or the narrowness and tyranny of academic disciplines, and that "university reform" deserves to be listed as the first of the "Possible Steps" in a program for creating a new political order (357–60). The great advantage for us academicians of locating the roots of our social problems in universities is that we don't have to leave the ivory tower to talk and write about them. We don't have to learn anything about the thinking and behavior of the people whose actions create social systems, because all the answers are in our heads or in the faculty club or in the writings of others whose heads have never left the faculty club.

But in another sense, *For the Common Good* is a failure as an academic book, because its authors violate a central academic precept by paying almost no attention to the writings of anyone who disagrees with them. Daly and Cobb simply *assume* that we face overwhelming environmental problems and take for granted that all readers agree. For those who might feel themselves inadequately informed about the details, they casually recommend the publications of the Worldwatch Institute, with no mention of the fact that the Institute's various reports have been severely criticized and in some cases rather decisively refuted. Every year for the past quarter-century, Worldwatch President Lester Brown has been predicting an imminent crisis in the world's grain supply, and every year events have proved him wrong. Daly and Cobb don't so much as entertain the possibility that this record calls into question the reliability of Worldwatch predictions.

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Opposing data and arguments on global warming, acid rain, or species extinction are not challenged by the authors because they are not mentioned.

The same is true of the authors' attack on economics. The faults of which they accuse economists have been frequently discussed in the profession in recent years. If Daly and Cobb had devoted only a few pages to indicting economists for their sins, they could be excused for not taking this literature into account. But about half of their book is in one way or another an attack on economic theory. Those who want to undertake such an extensive attack have an obligation to investigate the subject matter first, and not to bring their researches to a halt the moment they find someone who supports their position. Daly and Cobb state that they have found the writings of John M. Culbertson on international trade to be highly instructive and that they "draw freely upon his work." "Unfortunately," they write, "Professor Culbertson's forceful and cogent challenge to the free trade dogma has been so aggressively ignored by his fellow economists that he had to publish his book himself" (218). They don't consider the hypothesis that Professor Culbertson's writings are more forceful than cogent and that this could explain the attitude of the profession toward him. Anyone who has even a passing familiarity with the modern literature of economics knows that dissent from orthodoxy does not preclude publication and often abets it.

Part of the problem here may stem from the dual authorship of the book. My tennis doubles partners and I often let balls go past that either of us could have returned, because each of us assumes the other one has it covered. That could account in part for some of the lacunae as well as some of the tensions—I won't call them internal contradictions—in the book. My surmise is that author Daly (an economist) was much more often guided and constrained by the perspective of economic theory in what he chose to write than was author Cobb (a theologian), and that this has produced differences of emphasis that occasionally verge on incoherence. Chapter 16 on "Labor," for example, discusses worker participation in ownership and control with no recognition of principal-agent problems or the functions of residual claimancy. The experts it cites are not labor economists but the authorities likely to be read by a theologian who becomes interested in these questions, such as Michael Harrington, Barry Bluestone, and Harry Braverman. It is one thing to say that economists abstract carelessly; it is quite another to imply that they have nothing to contribute toward the understanding of issues with

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which they have dealt extensively. The succeeding chapter on "Income Policies and Taxes" is much different, with numerous indications, both in the arguments in deploys and the authorities it uses, that it was written by an economist. It is very hard to believe that the person who observed in Chapter 17 that "administrative capacity is in itself a scarce resource" would have written Chapter 16 or, for that matter, many of the other passages throughout the book in which problems of social organization are slighted or ignored.

Theology and Economics

Suggesting that the book would have benefited from more attention to economics raises the question of the relevance of theology to the discussion of economic and political issues. What do theologians such as John Cobb know that makes them worth listening to when they talk about international trade, employment relationships, or national defense? Chapter 18, titled "From World Domination to National Security," acknowledges an "inability to work out the details of the changing defense budget" that its recommendations imply, and urges the reader to consult the writings of Congressman Ronald Dellums. How much confidence should one have in the competence of a writer who cites Dellums as an authority on national defense without a word to explain or justify a recommendation so far from the center of the debate? While theological training and interests certainly don't disqualify anyone from talking about social systems, they do have a disturbing propensity to blur the issues. Theological concerns provide an ever-ready excuse for changing the subject when there is no persuasive evidence or argument available. Responsible discourse does not require sticking to the subject when the subject is the wrong one; but it does prohibit participants in any discourse from shifting to terrain on which they cannot be followed. There are no hard and fast rules here; every conversation must generate its own rules to some extent. But it seems to me that theological claims have an especially bad record as conversation stoppers in social policy discussions, and that the theological arguments in this book end up detracting from the quality of the discourse.

The concluding chapter of the book, titled "The Religious Vision," reads like an overly long peroration. It stirs together, among other ingredients, the deep ecology of Arne Naess and George Sessions, Aldo Leopold's land ethic, *The Gaia Hypothesis* of J. E. Lovelock, the

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"prophetic tradition" of Jewish religion, a Protestant Christianity purified of its anthropocentric excesses (partly by attention to "our Catholic sisters and brothers"), Gandhi and Martin Luther King, the hard-nosed biologism of E. O. Wilson, Alfred North Whitehead's process theology, and the rhetorical bows now mandatory in all schools of theology to the women's movement and feminist sensitivities. Perorations must be granted poetic license; but the license should not extend for 25 pages. The chapter struck me as little more than an extended claim upon the moral high ground.

I found myself often wondering just what use is going to be made of this book. It is hard to imagine any reader (other than a conscientious reviewer) persevering attentively from beginning to end of this meandering journey, all 400 largish pages of smallish print, about 400 words per page if my sample is representative, plus 40 more pages of text and a dozen pages of tables in the appendix. I fear that the book will become a kind of Bible among the explosively expanding number who combine interests in ecology and theology. In calling it a kind of Bible I mean that it will be kept on the shelf, revered, used as an authority, but rarely read all the way through and never read critically. The reading of Bibles seldom makes converts; it is an activity for those who are already converted. And this particular Bible will have the unfortunate effect of further polarizing discussion among those who hold divergent faiths.

Is There a Place for Those Who Think Small?

Mainstream economists tent to be *marginalists*. They have learned to think about problems in terms of small increments, of trade-offs between a little more of one thing and a little less of something else, and that is how they usually approach environmental problems. If human activity is putting unacceptable pressure on the biosphere, the marginalist tries to identify the particular activities that are generating the problem and to suggest some additional constraints. Marginalists contemplate adroit manipulations of taxes and subsidies, or some modest modifications of property rights, but almost never a radical restructuring of the entire system.

Marginalists consequently are not inclined to ask big-picture questions, to wonder about the larger context, or to worry about the optimal scale of the system as a whole. On this count at least, Daly and Cobb have a legitimate complaint against the practices of economists,

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who are quite capable of suggesting a more efficient arrangement of the furniture when the house is on fire. But there may be something else undergirding the authors' hostility to economics.

If marginalists could show us how to slow down the rate at which human activity is putting pressure on the biosphere through some low-cost policy changes, we might be able to carry on pretty much as we have been doing, without having to worry about creating an economic order that is just and participatory as well as sustainable. Daly and Cobb would not like that. They fear that we might then go on living the idolatrous lives to which most of us are presently committed.

Idolatrous lives? That is what ultimately disturbs these two confessed religious visionaries. "Barring some major breakthrough in fusion or fission energy," the authors observe at one point, "we will in the future have to live largely on the current flow of solar energy rather than on the accumulated sunshine of paleolithic summers" (204). Considering the radical social changes that will be necessary if we have to live on "the current flow of solar energy," one might have expected Daly and Cobb to assess the probability of a major breakthrough in fusion or fission energy. They don't do so because they obviously *want* to see radical changes in the way we live. The threats our economic system poses to the environment and to a sustainable future are blessings in disguise as far as they are concerned, because these threats can awaken us to the absurdity of an economy that is "destroying our own humanity" as well as killing the planet (21).

Those who are inclined to dismiss out of hand social arguments openly grounded in religious visions should at least consider the alternatives before consigning a book like this to the flames. One of the alternatives is social arguments *surreptitiously* grounded in religious visions. Robert Nelson has recently suggested that a substantial amount of environmental legislation would be struck down by the courts as an unconstitutional establishment of religion if the courts took seriously the arguments used to promote the legislation.[9] Daly and Cobb are at least candid about their ultimate concern.

And they could be substantially correct. But wherever we are, on the brink of catastrophe or just facing minor problems, we reached this point by responding to the incentives we encountered, and we will not move back from the brink or alleviate our problems until the incentives change. If Daly and Cobb are correct, our incentives will not change unless we experience something akin to a religious conversion. But it is essential to see that a religious conversion, however

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necessary, cannot be sufficient. People who have been converted to the view that the private passenger automobile has destroyed the ties of community in our cities and is now destroying the very air we breathe will continue to drive cars in cities until a whole lot of changes have occurred in the relative prices and costs that they encounter.

There are good reasons to worry about the direction in which a society drifts when its principal institutions are the product of human intentions but not of human design. The fundamental flaw of this book is that its authors have so little use for the one academic discipline that, despite all its mindless dogmatisms and esoteric digressions, grew out of efforts to explain the functioning and the evolution of just such societies and that continues to cultivate the mundane but vital truth that incentives matter.

NOTES

1. A superb example in this context would be Arrow's review essay on Richard Titmuss's book *The Gift Relationship*, which first appeared in *Philosophy and Public Affairs* 1, no. 4 (Summer 1974): 343–62. In this essay Arrow employs the tools of economic theory without introducing a single mathematical equation, discusses the deficiencies and perils of a society run exclusively on the basis of exchange, calls attention to the limitations of economic analysis as conventionally understood, and urges the importance to a market economy of virtue and something like Kant's categorical imperative.
2. Richard B. McKenzie, "The Sense and Nonsense of Energy Conservation," *Contemporary Issues Series* 45 (St. Louis: Washington University, Center for the Study of American Business, October 1991): 6–7.
3. Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (Indianapolis: Liberty Classics, 1981), 37.
4. Albert O. Hirschman, *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States* (Cambridge, Mass.: Harvard University Press, 1970).
5. Kenneth E. Boulding, "Toward a Pure Theory of Threat Systems," *American Economic Review Papers and Proceedings* 53, no. 2 (May 1963): 425.
6. Kirkpatrick Sale, *Human Scale* (New York: Cowan, McCown, & Gesgheyon, 1986). Daly and Cobb quote pages 398–9.
7. And the attack continues. In the fall of 1991 *The Christian Century* published an article by Clifford W. Cobb and John Cobb on "The Costs of Free Trade," in which they argued that the principle of comparative advantage is not applicable in today's world. See *The Christian Century* 108, no. 30 (October 23, 1991): 967–9.

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8. None of this is intended to suggest that there are *no* satisfactory ways to weigh and compare benefits and costs to different people or that the calculation of monetary benefits and costs are of *no* use when we are trying to decide whether the benefits to some of a particular policy justify its costs to others. The essential point here is merely that the monetary valuations of the market do not capture everything most people would want to take into account in deciding whether the expected benefits from a policy are sufficient to justify its costs. Monetary valuations implicitly assume that everyone places the same value on a unit of money, which is most unlikely to be true where incomes are highly unequal. And the market is clumsy-fisted when picking up the value of such goods as *group spirit* and *community*. These are central concerns for Daly and Cobb.
9. Robert H. Nelson, "Is Wilderness a Church?" *Working Paper 90–36* (Bozeman, Montana: Political Economy Research Center, 1990). On the broader question of religious visions and economic arguments, see Nelson, *Reaching for Heaven on Earth: The Theological Meaning of Economics* (Savage, Md.: Rowan & Littlefield, 1991).

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Mark Sagoff

FREE-MARKET VERSUS LIBERTARIAN ENVIRONMENTALISM

Libertarians favor a free market for intrinsic reasons: it embodies liberty, accountability, consent, cooperation, and other virtues. Additionally, if property rights against trespasses such as pollution are enforced and if public lands are transferred as private property to environmental groups, a free market may also protect the environment. In contrast, Terry Anderson and Donald Leal's Free Market Environmentalism *favors a free market solely on instrumental grounds: markets allocate resources efficiently. The authors apparently follow cost-benefit planners in endorsing a specious tautology that "defends" allocative efficiency by defining "social welfare" in terms of it. They make no attempt to show that allocative efficiency is a good thing or that it is consistent with environmental protection. By regarding pollution as a compensable external cost rather than as an enjoinable nuisance and by arguing that the government should auction rather than give public lands to environmental groups, moreover, Anderson and Leal offer far less protection of the environment than libertarians do.*

Terry Anderson and Donald Leal of the Political Economy Research Center begin their book *Free Market Environmentalism* (San Francisco: Pacific Research Institute, 1991) by admitting that for many people, "the very notion of free market environmentalism is an oxymoron" (1). And one can see why. Knowing that markets transfer resources to those who pay the most for them, environmentalists worry that the highest

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bidder too often coincides with the lowest denominator. What free markets do best—create and satisfy consumer demand—dismays environmentalists. They do not regard efficiency as an unmixed blessing. The more efficient markets become, the more quickly they can turn America into a shopping mall and nature into a theme park.

Abandoned strip mines, derelict factories, eroded farms, and clear-cut forests attest as surely as suburban malls and tract developments to the power of the almighty dollar to replicate itself at the expense of the natural environment. Nobody, it seems, ever went broke turning dells into delis, arcadias into arcades, or, in the words of the popular song, paradises into parking lots. Environmentalists know that effluents, emissions, and eyesores, even if efficient from an economic point of view, can still outrage us from a moral, aesthetic, cultural, and political point of view. That is why environmentalists look to politics to keep markets, however efficient, from replacing our natural birthright with bowls of consumer porridge.

The Cult of Microeconomic Efficiency

"The view that markets and the environment do not mix," Anderson and Leal observe, "is buttressed by the conception that resource exploitation and environmental degradation are inextricably linked to economic growth" (1). Environmentalists do not oppose economic development, however, if one understands it in macroeconomic terms, that is, employment, higher wages, lower inflation, in short, prosperity. Environmentalists recognize that poverty often forces people to pillage resources that prosperity permits them to protect. To the extent that free markets promote prosperity, environmentalists are likely to agree with Anderson and Leal that "market processes can be compatible with good resource stewardship and environmental quality" (6).

The proposals found in *Free Market Environmentalism*, however, have nothing to do with prosperity, employment, inflation, or any other concern associated with macroeconomics. They are restricted to the entirely separate set of issues one encounters in texts on microeconomics, particularly resource economics. These texts define the goal of resource policy in relation to microeconomic efficiency, not macroeconomic performance. Efficiency is the reason Anderson and Leal favor free markets over political choice. "In the private sector, efficiency matters"; in the political sector, "the bottom line depends on the electoral process where votes matter, not efficiency" (16).

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This is true. In the political process, at least in theory, representatives debate policies on their merits and, after deliberation, determine where the public interest lies. Democracy at its best invites people to take the point of view of the community, to ponder what best expresses its values, not just to pursue their prior interests as individuals. For example, people might vote to preserve a wilderness because they believe that course is correct for the nation, although they would pay to visit the place as individuals only if it were made into a ski resort. The political result, then, depends on what people agree after deliberation is best for the community, not what is efficient in satisfying their pre-existing consumer demands.

Anderson and Leal observe, again correctly, that market exchange is much more likely than political deliberation to satisfy "the subjective values of citizens" (16). This is unsurprising. Theorists since Aristotle tell us that political life aims to define the goals of the community—to elevate or educate preferences, not simply to satisfy them. Political deliberation and economic aggregation, philosophers such as Rousseau remind us, seek different ends and rest on different conceptions of public choice.

The founders of American democracy warned that republican government should not mire itself in making tradeoffs between special interests or "factions," as Madison called them. Instead, the democratic process must be seized with moral, aesthetic, and cultural questions, whether the issue is peace and war, race, gender, religion, family values, or social and environmental policy. The view opposed to Madison's—that the principal function of politics is to satisfy the preexisting preferences of individuals, however arbitrary or ill-considered—is a position for which there is no plausible argument. It is also the political theory Anderson and Leal assume is correct.

Anderson and Leal take it for granted that the main goal of environmental policy must be economic efficiency, which is to say, the satisfaction of subjective preferences, weighted by willingness to pay, to the extent that resources will allow. This is where environmentalists are likely to part company with them. Environmentalists do not assume in advance, as Anderson and Leal do, that economic efficiency is the purpose of environmental policy. Rather, they would give other concepts and values a hearing within constitutionally protected political processes bounded by personal rights.

Environmentalists, as we shall see, understand the value of liberty. They may well defend the sanctity of property rights. And they recognize the importance of economic prosperity. They may nevertheless

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see little virtue in microeconomic efficiency. Environmentalists may deny, indeed, that efficiency connects—as Anderson and Leal assume it does—with the goals everyone agrees are important, such as liberty, prosperity, and the protection of personal and property rights.

Environmentalists, indeed, are likely to ask why allocative efficiency is a good thing—why it is a goal worth pursuing. It is no answer that efficiency promotes economic growth or prosperity, since economists have never shown that microeconomic efficiency bears any clear relationship, conceptual or empirical, to macroeconomic performance.[1] Anderson and Leal apparently believe that efficiency promotes prosperity. As we shall see presently, however, no basis, empirical or theoretical, exists for this belief.

One cannot answer that allocative efficiency is a good thing because it promotes social welfare, since economists use "social welfare" as just a stand-in or proxy for "allocative efficiency," both of which are defined in terms of the satisfaction of preferences weighted by willingness to pay. Common wisdom ("money does not buy happiness") supports the conclusion of social science research that once basic needs are met, preference satisfaction, economic efficiency, and "social welfare" bear no significant relation to happiness or well-being.[2] Anderson and Leal themselves ridicule the collectivist notion of social welfare—as indeed they should—when they castigate natural resource economics for positing the importance of "a 'socially efficient' allocation of resources" (9).

Environmentalists, then, may see little reason to favor the single goal Anderson and Leal propose, namely, efficiency in the allocation of resources. They may, indeed, reject this goal. To understand why, consider an example. Lange's Metalmark, a beautiful and endangered butterfly, inhabits sand dunes near Los Angeles for the use of which developers are willing to pay more than $100,000 per acre. Keeping the land from development would not be efficient from a microeconomic point of view, since developers would easily outbid environmentalists. Environmentalists are likely to argue, however, that preserving the butterfly is the right thing morally, legally, and politically—even if it is not economically efficient.

Environmentalists, in short, may cast environmental problems in moral, aesthetic, cultural, political, and even religious terms. The Anderson-Leal approach, which envisions the environment strictly in microeconomic terms, may appear to environmentalists, then, as beside the point. Environmentalists, in other words, may see environmental degradation as an aesthetic, cultural, political, and moral failure

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but not necessarily as a market failure. Accordingly, environmentalists will not agree with Anderson and Leal that the way to solve environmental problems is to allow markets to allocate resources to the highest bidders.

Free-Market vs. Cost-Benefit Economics

Anderson and Leal begin their book by soundly attacking the cost-benefit approach of mainstream resource economics, which they rightly portray as a kind of collectivism. They summarize their criticism as follows:

> To counter market failures, centralized planning is seen as a way of aggregating information about social costs and social benefits in order to maximize the value of natural resources. Decisions based on this aggregated information are to be made by disinterested resource managers whose goal is to maximize social welfare. (9)

The cost-benefit approach, Anderson and Leal point out, "has been premised on the assumption that markets are responsible for resource misallocation and environmental degradation" (9). Actually, the approach Anderson and Leal reject is premised on two assumptions. First, mainstream resource economists define "social welfare" in terms of "preference satisfaction," and measure "preference" in terms of willingness to pay. Then they argue tautologously that those who are willing to pay the most for resources should own them, since that allocation maximizes social welfare. Anderson and Leal accept the idea that resources should go to the highest bidders apparently because they, too, define "social welfare" to coincide with allocative efficiency. They show no more interest than do the welfare economists they criticize in the question of whether "social welfare" as they define it has anything to do with human well-being as ordinarily understood.

The second assumption—the one that Anderson and Leal challenge—is this. According to the cost-benefit theory, free markets, because of various familiar kinds of problems, fail systematically and pervasively to allocate resources to the highest would-be bidders. Mainstream resource economists then call upon the government to "correct" these market failures by setting prices in ways that will reflect the "true" worth of those resources. Mainstream resource economists conclude, then, that expert managers (presumably themselves)

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rather than free markets ought ultimately to be in charge of allocating environmental goods and services.

Anderson and Leal do not reject—as environmentalists might—the first premise of resource economics, which asserts the "ideal" of allocative efficiency. Anderson and Leal accept the postulate that there are myriad exogenous or pre-existing preferences "out there" and that the goal is maximally to satisfy them. Having swallowed this camel, Anderson and Leal strain at a gnat—they deny that "scientific management" and "centralized planning" will succeed better than markets in allocating resources in ways that satisfy those subjective pre-existing preferences.

The issue between Anderson-Leal and the cost-benefit position, then, comes down to this. Both hypostatize in the minds of individuals a set of preferences that exist exogenously from—and therefore are not simply artifacts of—the methodology or mechanism used to identify and to satisfy them. Anderson and Leal assert and cost-benefit theorists deny that even in instances of putative market failure—for example, when transaction costs are high—free markets will succeed better than will centralized scientific management in satisfying those exogenous preferences on a willingness-to-pay basis.

Discovering which position is correct should be no problem. One need only determine independently what these exogenous preferences are and then see whether the market or the government does the better job of meeting them. The difficulty, though, is that no method exists to get behind or away from market and cost-benefit methodologies to identify or describe the preferences against which both the accuracy and the efficacy of these mechanisms or methodologies must be tested.

Preferences, unlike cabbages, are theoretical constructs, not observable things. That is why they are so hard to measure. Subjective values or preferences exist, if anywhere, inside the minds of the people who have them; they are not part of the public world. They are hypothetical mental entities—dispositions to act in certain ways—that economists posit to explain and, presumably, predict behavior. In the old days, social scientists used to posit demons that made you act as you do; they recommended ritual exorcisms to get rid of them. Nowadays, they posit preferences, and like true scientists, obtain grants to develop methodologies to measure and to satisfy them.

Attempts to measure preferences and to predict behavior on the basis of them, however, have succeeded only in developing empirical and conceptual anomalies and difficulties, such as preference reversal

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and inconsistency, and still more methodologies to try to resolve *them*. Preferences do not seem to be consistent, or enduring, or to be independent of unrelated alternatives, or to have any of the qualities we would think they must have if they are to lead to behavior that is "rational." That is why dozens of major academic disciplines and industries have arisen to try to figure out how to figure out preferences. We can only hope that some day preferences, like demons, will be tossed on the dung heap of discarded-because-useless hypostatized theoretical entities. That might be real scientific progress.

Until that time comes, we can say that no independent "objective" method exists to identify, measure, or assess preferences or subjective values. The technique you use to search will largely determine which preferences you find. If you go with markets, you will get one set of preferences at any time; if you go with contingent valuation methodology, you will get another; voting behavior will get you a third; and other instruments will get other rankings or orderings. It is silly to think that preferences really exist independently of the theories that posit and techniques that identify them. It is silly to suppose that we can get "behind" these theories and techniques, moreover, to determine which of them gets preferences "right." Any theory that hypostatizes the existence of preferences—or demons or whatever—measures them correctly for the purposes of that theory. When theoretical approaches differ, they may be equally correct or incorrect, for no logical way exists to adjudicate between them.

Anderson and Leal analogize the cost-benefit or "marginalist" approach in resource economics to communism. Marginalism and Marxism, indeed, coincide in a fundamental respect. Each appeals to *hypothetical* rather than to *actual* choice. Both would set aside the results of legitimate political and economic institutions, then, in order to achieve outcomes that more nearly represent what people would choose under ideal albeit hypothetical conditions.

The cost-benefit theorist argues that because of transaction costs and other difficulties, markets systematically fail to allocate resources to those who are willing to pay the most for them. Market failure, then, prevents the outcomes people choose from coinciding with those they prefer—in other words, those they would choose in the absence of problems like transaction costs. In order to determine what people would choose—what they prefer—economists are developing methodologies based on surveys and other scientific instruments. Empowered by these methodologies, resource economists advise public officials to "correct" the results of legitimate but imperfect economic and

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political processes by replacing them with outcomes that more nearly reflect what people prefer and therefore would choose in ideal conditions.[3] In this way, cost-benefit theorists insist on *preference* as distinct from and in opposition to *choice*.

Marxism likewise bases allocation on hypothetical, not actual, choice. For the Marxist, what is important is not the choices people *do* make but the choices people *would* make if they were free of their corrupt bourgeois ideology. The marginalist and the Marxist, then, both second-guess the outcomes of legitimate market and political institutions; both attempt to see through actual behavior (which is only "appearance") to measure the "true" subjective values that lurk beneath the phenomena. And both therefore argue that society should depend on a vanguard of experts, namely, themselves, to allocate resources according to their scientific methodology, which alone represents the correct view of social well-being and progress.

Environmentalists will enjoy the way Anderson and Leal present cost-benefit resource economics as a kind of centralized planning or collectivism. Environmentalists will find this aspect of their book appealing, at least on the principle that the enemy of thine enemy is thy friend.

Libertarians vs. Free Marketeers

Environmentalists will reject the mainstream approach in resource economics, however, for reasons quite different from those that persuade Anderson and Leal. Environmentalists are concerned about saving magnificent landscapes and species, keeping the air and water clean, and in general getting humanity to tread more lightly on the earth. They are not concerned, as are Anderson and Leal, about satisfying preferences on a willing-to-pay basis or about maximizing a conception of social welfare defined as a function of the satisfaction of those preferences.

Accordingly, environmentalists will reject the cost-benefit approach because it takes allocative efficiency as its goal. Anderson and Leal, in contrast, accept the goal, but argue that cost-benefit management is less likely than free markets to achieve it. Why do Anderson and Leal believe that allocative efficiency is a goal worth achieving? Why do they believe it is compatible with the goals espoused by environmentalists? Indeed, why, do they associate efficient resource allocation

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with the functioning of free markets in which property rights are strictly enforced and well defined?

Consider, first, the concept of property rights. "At the heart of free market environmentalism," Anderson and Leal assert, "is a system of well-specified property rights" (3). They explain: "Free market environmentalism depends on a voluntary exchange of property rights between consenting owners and promotes cooperation and compromise" (8).

To see what Anderson and Leal mean by "cooperation" and "compromise," imagine a situation in which an oysterman owns or has leased and thus has the exclusive right to occupy the oyster beds he plants with oysters. Now suppose his neighbor's sewage pollutes and renders the oyster beds useless. The oysterman may have two different legal remedies. First, he might have the legal power to enjoin the nuisance, that is, to stop his neighbor from dumping effluent on the oysterbeds. The neighbor would then either meet the oysterman's price or cease polluting his property. This would seem to ensure compromise and would also protect the environment.

A second kind of "remedy" appeals to resource economists and others who would not let property rights stand in the way of an efficient allocation of resources. On this second approach, the oysterman could not sue for injunctive relief but only for compensation or damages in the amount of his lost income. Thus the polluter would not have to pay the price the oysterman demands. Rather the polluter could take whatever property rights he likes as long as he is willing to pay the price an agency of the state—usually a court—says those rights are "objectively" worth.

Libertarians know how perniciously people behave when they can take what they want, bound only by the need to pay compensation. During the early nineteenth century, for example, owners of whaling and merchant vessels used to shanghai passersby to crew their ships. The owners did not obtain the consent of those they impressed—usually for about three years—but they did pay these people the going rate for their time as determined by labor markets. Perhaps the ship owners might have used fewer workers or raised wages to get more volunteers—but why should they have bothered? It is easier to shanghai workers and then compensate them at rates their labor is "objectively" worth.

Shall we similarly allow polluters to shanghai persons and their property as catchment areas for their emissions, provided they can compensate their victims at rates set for risks in labor or other mar-

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kets? What difference in principle could possibly exist between the practice of captains of whaleboats and that of captains of industry if both are free to use the bodies of people without their consent, provided they pay compensation at rates some expert says the property, labor, or risk is worth?

The first question one must ask of free-market environmentalism, then, is who is free? Are polluters free to pollute or are individuals free to enjoin pollution? Anyone who takes liberty and property seriously must defend the right of injunctive relief in nuisance cases. Anything less simply gives polluters the power of eminent domain over any person or property they wish to violate or invade.

Anderson and Leal assert that "when waste intrudes into another's physical environment without his consent . . . that garbage becomes pollution" (135–6). One might infer that these authors require, then, that polluters gain the consent of those upon whose persons and property they would trespass. The result of such bargaining would be very favorable to environmentalists—many of whom, for ideological and other reasons, might refuse to tolerate any more than *de minimis* levels of pollution.

Anderson and Leal, however, abandon libertarian principles at this early and crucial point. They deny victims of pollution the power to obtain injunctive relief; they allow them only the right to receive compensation, in an amount determined on some "objective" basis, for the costs they incur as a result of the pollution or garbage foisted upon them. "Compensation gives the person who generates the garbage an incentive to compare the benefits of garbage production with the costs of disposal to arrive at an 'optimal' level of both" (135). In other words, Anderson and Leal put a cost-benefit test in place of injunctive relief and thus destroy the meaning and substance of property rights.

Environmentalists may view pollution more as an evil than as a cost; they may criticize effluents in ethical more than in economic terms. Yet unlike other moral wrongs—rape, murder, and theft, for example—pollution, to some extent, can be a necessary evil, since eliminating all of it would close the economy down. At some point, then, the protection of property rights becomes too onerous, where "too onerous" does not mean inefficient in economic terms but supererogatory from a moral point of view.

Environmentalists, therefore, argue for laws that limit pollution to the lowest feasible levels. These laws have an ethical, not an economic, rationale. They do not seek optimal levels of pollution; *they seek the protection of property rights*. Anderson and Leal, in spite of their putative

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libertarianism, apparently have no respect for the right of property owners to be free of trespass. They would give polluters power routinely to make offers their victims cannot refuse.

Environmentalists who wish to protect property rights may call for technology-forcing programs to minimize the pollutants that the economy cannot feasibly eliminate. The only alternative to minimizing this kind of pollution would be to enjoin it—if we care about protecting property rights. Thus, libertarian environmentalists must tell us which they prefer: public laws that ratchet pollution down to technologically achievable minimums, or injunctions issued against polluters so routinely that the economy may not function. The Anderson-Leal recommendation—forced sale of property rights to polluters at prices determined by the government—makes a mockery of libertarian principles—and may not protect the environment.

Resource Stewardship and Environmental Quality

Free-market processes, Anderson and Leal write, "can be compatible with good resource stewardship and environmental quality" (6). To find out what they may mean by "good resource stewardship and environmental quality," consider an example they give. In the area of the Great Lakes, as Anderson and Leal observe,

> the Kingston Plains has never recovered from logging done a hundred years ago. Efforts have been made to replant the area, but the soil is too infertile and sandy. It took hundreds of years for the forest to grow, and it will take hundreds more for the area to recover. (47)

Yet Anderson and Leal note that even if clear-cutting the forest produced a nasty moonscape for centuries, this does not mean it was a bad decision. On the contrary, trees cut from this area fetched about $20 per acre which, "had it been invested in bonds or some other form of savings at the time . . . would now be worth approximately . . . $2.8 billion." Anderson and Leal plausibly argue that because "the land in this area is not worth anything close to this, we must infer that harvesting trees was the correct choice" (47). It was correct in the sense of "efficient"—which appears to be the only objective value Anderson and Leal recognize. That a policy could be good or bad in any other sense, for example, morally, aesthetically, culturally, legally, or politically, would be a surprise to them.

Environmentalists generally define "stewardship" and "environmen-

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tal quality" in moral and aesthetic rather than economic terms. They dream of a land where wildlife abounds, waters flow free of pollution, wildlands and habitat are preserved, extinctions are rare, and people live in landscapes that retain the particular characteristics of their history and location. Environmentalists in the United States are proud of the political decisions their nation has made to protect its natural heritage—decisions that go to the morality of the community, not the "preferences" of individuals. When citizens and their representatives deliberate in moral and aesthetic terms about the fate of the environment, they often reach conclusions utterly at odds with those they would reach if they considered only the economic aspects—the investment potential—of things. That is why we have the Metalmark in place of another shopping mall.

We are now in a position to understand what Anderson and Leal mean by "environmental quality" and "good resource stewardship." They mean exactly what their cost-benefit cousins intend by these terms. They mean the kind of stewardship that permits any amount of strip mining, clear cutting, erosion, or degradation that produces a profit that, if invested, would generate more income than would practices of conservation. Thus, even the devastation of the forests near the Great Lakes, however it may affront environmentalist values, is compatible with good resource stewardship. "When judged against prudent investment criteria, nineteenth-century lumber markets were efficient" (47).

Environmentalists might agree that these markets were efficient. They might concede that the extinction of species, the mining of sanctuaries, the pollution of bays and estuaries and, indeed, the desecration of virtually everything of moral, aesthetic, or cultural significance all make perfect sense from the point of view of economic efficiency—the point of view Anderson and Leal absolutely take for granted and as given. Environmentalists contend, however, that the protection of what is beautiful, authentic, charming, historic, and inspiring is right and good *whether or not* it is economically efficient.

Objective Values vs. Subjective Preferences

To this assertion Anderson and Leal reply: "None of these values is right or wrong; each simply represents a *special interest*" (82). How do Anderson and Leal know that none of the values environmentalists espouse is right or wrong? On what moral theory do they base this

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assertion? And if this theory is sound, then what shall we say about the value they endorse, that is, economic efficiency? This seems to be a policy preference—a special interest—of resource economists and two free-market economists. How much are Anderson and Leal willing to pay for resources to be allocated efficiently? Why do they believe that their preference for allocative efficiency represents an objective or intrinsic moral good while the values environmentalists hold—love of beauty, nature, purity, whatever—are just special interests? Anderson and Leal never explain why resources should go to the highest bidders, nor why this policy principle, rather than those environmentalists propose, should govern the allocation of resources. Why does the principle of allocative efficiency—or the concept of "social welfare" which is its logical equivalent—have the character of an objective normative truth, whereas every other policy prescription merely states a subjective interest or preference?

It is important not to confuse this question with another, namely, whether people should be free to make their own choices under rules fair and congenial to all. Environmentalists are likely to endorse *that* principle. They will point out that through the democratic political process of the United States, the nation has freely chosen to protect endangered species even if it is inefficient to do so. People consistently favor—and their political representatives consistently choose—environmental policies that make no sense whatever, as Anderson and Leal know, in terms of economic efficiency. Indeed, environmental statutes often explicitly rule out a cost-benefit test. Perhaps Anderson and Leal reject the results of democratic political processes, condemn the constitutional form of government, and deny that many basic political rights and freedoms are anything more than subjective preferences. But they can hardly do so in the name of freedom of choice.

It would be one thing if Anderson and Leal attempted to say why efficiency is a good thing—why it is better, all else being equal, that resources go to the highest bidder. But they do not even bother; they assume it is so; and they tell the rest of us, environmentalists especially, that other views about resource policy merely express special interests. That is the reason there is so little argument in *Free Market Environmentalism*. Its authors assume that everyone agrees allocative efficiency is the objective of resource policy, so the only question is whether markets or bureaucracies are better at achieving it. This speaks volumes about the present state of resource economics.

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The Fallacy of Disparate Comparison

Many of the most convincing passages of *Free Market Environmentalism* show how governmental ineptitude, corruption, and well-meaning stupidity have destroyed environmental values, particularly regarding public land. The libertarian critique of below-market timber sales, subsidized water to farmers, and subsidies for nuclear power plants is a brilliant and telling one, and environmentalists cannot be too grateful for it. Likewise, free-market economists point to hopelessly complex and arcane regulations, like those associated with Superfund, that can be charitably described as full-employment acts for lawyers. These economists make their case convincingly when they tell stories of regulatory rigor mortis, bureaucratic bottleneck, and governmental gridlock. Environmental regulations, as they show in example after example, often fail even to make environmental sense.

No one can question the accuracy of these war stories; they are too true; but one may be skeptical of the conclusion free-market economists draw from them. They conclude that a free market, in which property rights are well defined and enforced, will be kinder and gentler to the environment than even a well-intentioned government actually is. In political decision making, as these war stories suggest, interest groups tend in fact to oppose rather than to accommodate each other. With private control of resources, in contrast, "each side tends to gain by satisfying the other's desires. Cooperation replaces political conflict as both sides prospect for harmony" (84).

A free market with inviolable property rights, low transaction costs, and so on, may, indeed, treat nature better than does an often bumbling and occasionally corrupt bureaucracy beset by special interests. However, this kind of argument, which is standard in the literature, commits the fallacy of disparate comparison. It compares what the perfect market would do in theory with what imperfect governmental agencies, at their worst, have done in fact.

It is easy to turn the tables on this kind of argument—to tell war stories about the malfunction of free markets and then compare these stories to the theory of Madisonian republicanism. Recently, it has been reported that a natural resource company published false statistics about the value of its holdings to run up the price of its stock. Many other examples of fraud, duplicity, rapacity, greed, and indifference to the well-being of others grace the annals of business. Compare them to the outcome of perfect Madisonian deliberation in which public officials put aside their individual interests—as legislators did

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when they debated the Gulf War—to ponder and then converge upon the public interest. You can defend virtually any method of decision making against its opposite by contrasting the theory of one against the practice of the other.

Thus, Anderson and Leal, after explaining how in theory a perfectly competitive market will function efficiently, observe that "the political sector operates by externalizing costs" (14). In a perfectly functioning political sector, however, officials, guided by civic virtue and brilliant economic and social analyses, would get everything right. Meanwhile, examples abound in which it is industry that operates by externalizing costs—say, by polluting the atmosphere. Externalized costs, fraud, stupidity, chicanery, special pleading, and so on, pose problems for both private- and public-sector approaches to public policy. An ideal market, moreover, presupposes an ideal government to perfectly define and defend property rights.

Free-market economists often respond, in effect, by arguing that perverse incentives operate in the public sector to polarize positions and widen conflicts. Yet perverse incentives also operate in the private sector. Some of these are well known. For example, managers have a perverse incentive to squander resources for quick profits in order to get reputations as money-makers and thus attract a higher salary at a competing firm. And as long as quick-profit schemes exist, they present an incentive to liquidate natural resources.

The most general perverse incentive that vitiates the free market may be illustrated by an example presented by Arthur Pigou. Suppose a firm wishes to build a factory in a quiet residential area. The residents would have to grin and bear the ugly face of the factory or pay the owners not to build in their neighborhood, since nuisance law does not generally recognize amenity rights. Presumably, a free-market advocate would argue that the residents could express their wishes by compensating the factory owner for the marginal advantage between building in their neighborhood and going to the next best location. To be sure, the residents would have to overcome free-rider costs, but perhaps that is a problem they can somehow solve. Environmentalists, however, see in this situation a much darker difficulty. The developer, having received a bribe not to build in one area, has an incentive to make the same threat in another. He may profit most by never building the factory. The developer can extort payments from neighborhood after neighborhood in which he threatens construction.

One might argue that by zoning property for particular uses the government cuts off perverse market incentives of this kind. Yet liber-

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tarians are not fond of zoning in general and, in particular, they follow Richard Epstein in arguing that the government should not "take" property rights through regulation without paying compensation to the owners of those rights.[4] If a property owner has a right to build an unsightly factory on his land—even if the purpose is to extort payments or "rents" from appalled neighbors—then on the libertarian account the government may not intervene unless it is itself prepared to make those payments. The problem this example suggests is that the invisible hand of the market, in theory, becomes an invisible foot in the absence of the power of governments to enact far-reaching environmental regulations.[5]

Libertarian Environmentalism

In spite of these and other reservations environmentalists will entertain, there is a lot to be said for libertarian environmentalism. The problem is that Anderson and Leal do not say it. They are libertarian north by northwest; when the wind blows southerly, they revert to cost-benefit economics. To understand the important advantages private property rights offer environmentalism, we have to go to the work of real libertarians, who offer environmentalists a much better deal than Anderson and Leal do. These writers show why libertarian environmentalism is not an oxymoron.

Libertarians other than Anderson and Leal have little patience with the argument that pollution is acceptable as long as it "pays it way"—in other words, as long as its benefits to society as a whole outweigh its costs to individuals. As libertarian philosopher Tibor Machan has pointed out, a free-market approach "requires that pollution be punished as a legal offense that violates individual rights."[6] The libertarian economist Murray Rothbard agrees: "The remedy is simply to enjoin anyone from injecting pollutants into the air, and thereby invading the rights of persons and property."[7] Jane Shaw and Richard Stroup, colleagues of Anderson and Leal at the Political Economy Research Center, add that pollution "is an invasion of person and property just as personal assault is."[8]

Libertarians insist most fundamentally that people are to be treated as ends in themselves and not merely as means to collective ends, especially collective ends as dubious as economic efficiency. Accordingly, libertarians do not tolerate forced sales—for example, they do not want the government to determine the price at which polluters

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may buy the right to enter your organs and contaminate your precious bodily fluids. If you cannot enjoin polluters from this kind of assault or trespass, property rights mean nothing. Risk-benefit analysis is the *alternative* to the protection of property rights, substituting centralized planning for the rule of law.

The problem with allowing routine injunctive relief in nuisance cases, however, is that individuals who refuse to be bought off could close the economy down. Recent studies using "contingent valuation methodology" suggest that a majority of Americans, indeed, would prefer injunctive relief against polluters to receiving cash compensation in *any* amount.[9] It would be convenient to stigmatize these individuals as "rent-seekers," that is, as engaging in strategic bargaining behavior to maximize the prices they get relative to what others demand. In reality, though, their behavior has nothing to do with rent-seeking. It is ethical and principled choice—free choice of exactly the kind libertarians are in business to honor and protect.

To protect property rights while avoiding the extreme consequence of closing down the economy, the preponderance of our environmental statutes require industry to *minimize* emissions it cannot feasibly *eliminate*. Critics constantly point out that these statutes often fail a cost-benefit test. Such criticisms miss the point of the laws, however, which is not to allocate resources efficiently, to "optimize" levels of pollution, or to maximize social wealth. Rather, these laws, by conceiving pollution as a nuisance or trespass rather than as a cost, strive to protect property rights.

Environmentalists could follow the lead of libertarians, therefore, by refusing to regard pollution as an economic externality and by insisting instead that it be treated as a tort. This way of characterizing pollution—in deontological rather than utilitarian terms—should sit well with environmentalists. And it has a clear moral appeal and rationale—rather than depending on the empty dogmas of welfare economics.

In a series of well-argued articles, moreover, libertarian writers have argued—in the spirit of work by Ronald Coase—"that it does not matter very much who owns a resource when it comes to determining how that resource will be used."[10] They urge, then, that "large chunks of federal land be given in fee simple to established conservation groups."[11] Anderson and Leal's colleagues John Baden and Richard Stroup write: "It would be especially beneficial if areas with both ecological and economic importance were managed by groups with the expertise to weigh the potential damage to the environment

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against the potential profits. Making environmental groups the owners . . . of the holdings would accomplish this end."[12]

The advantages of this suggestion are obvious. If environmental groups owned the lands they now (often in vain) implore the government to protect, they could make their own bargains with industry. They could bond petroleum companies, for example, to make a "surgical strike" on the oil in the "1001" tract, a grim area of tundra which constitutes a small fraction of the Alaska National Wildlife Refuge. The environmental groups could then invest the considerable proceeds in purchasing rain forest and other ecological wonderlands that may be far more desirable than this tract of tundra for purposes of conservation.

By contrast, environmentalists will find the Anderson-Leal approach problematical insofar as it recommends that the government privatize, that is, sell off, national forests, parks, and other public lands. Environmentalists know they will have far more difficulty than, say, oil companies in concentrating the buying power of all those who are interested in a particular disposition of a wilderness area. Therefore environmentalists are likely to view with alarm the recommendation by Anderson and Leal that "environmental groups could compete to purchase or lease public resources" (93).

Libertarian arguments offer environmentalists many advantages insofar as these arguments are not wedded—as Anderson and Leal's are—to the central dogmas of welfare economics. Not only do libertarian economists recommend that the state donate to environmentalists ecologically sensitive lands, but in putting the emphasis on choice rather than utility, libertarians are willing to back up property rights with injunctive relief, thereby prohibiting the forced sales Anderson and Leal would tolerate. Libertarians also reject the cost-benefit approach because it opposes freedom of choice—which is the right reason to reject it—rather than because public officials, as Anderson and Leal charge, can't shoot straight.

This is by no means to say that there is nothing good in free-market environmentalism apart from libertarianism. Everyone knows that the destruction of nature often results from perverse incentives—for example, the absence of property rights in a commons. Society may more effectively reach environmental goals, therefore, by restructuring market incentives than by directly allocating resources. Incentives for reducing pollution—market-based schemes for trading pollution allowances, for example—may at least in principle succeed far better than "command-and-control" approaches to reducing pollution.

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As long as they have a say in the preliminary question of the level of pollution to be permitted, most serious environmentalists now endorse free-market schemes like the one included in the acid rain provisions of the Clean Air Act, which allow polluters to trade pollution allowances under a "cap." Free-market advocates who argue on theoretical grounds for market-based incentives for environmental protection have by now convinced virtually everyone: at this point they are pushing against an open door. The problems worth discussing are no longer theoretical but have to do with implementation.[13]

Free-market environmentalists also do a great service by observing that when industry and other special-interest groups "capture" governmental agencies, regulation can be environmentally devastating. For example, by selling timber below cost the Forest Service causes enormous environmental damage a free market might not allow.[14] Environmentalists complained that the Office of Management and Budget during Republican administrations, while pressing free-market ideology against environmental regulation, had no problem with Department of Interior giveaways to industry. A free-market approach does not necessarily coincide with a pro-industry position. On the contrary, it provides a powerful argument against the use of government agencies to promote industry interests.

Environmentalists may object to libertarian ideology for atmospheric rather than for logical reasons: libertarians appear to be radical right-wingers who care more about property rights than about the fate of the earth. Yet what libertarians care about most—the separateness and inviolability of the individual—is not all that different from what environmentalists care about. Libertarians argue that the best way to preserve the environment is to protect property rights. Environmentalists argue that the best way to protect property rights is to preserve the environment. It may be time to examine the convergence—rather than continue to assume the opposition—of these two views.

NOTES

1. The scholarly literature concludes that there is little or no relation between macroeconomic prosperity and microeconomic efficiency. For discussion, see David Shepherd, Jeremy Turk, and Aubrey Silberston, eds., *Microeconomic Efficiency and Macroeconomic Performance* (Oxford: Philip Allen, 1983).
2. For discussion, see A. Campbell, P.E. Converse, and W. Rodgers, *The Quality of American Life: Perceptions, Evaluations, Satisfactions* (New York:

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Russell Sage Foundation, 1976); and Michael Argyle, *The Psychology of Happiness* (London: Methuen & Co., 1987).

3. For an amusing example of this kind of economic deconstruction of the Prevention of Significant Deterioration provisions of the 1877 Clean Air Act Amendments, see Robert D. Rowe, Ralph C. D'Arge, and David Brookshire, "An Experiment on the Economic Value of Visibility," *Journal of Environmental Economics and Management* 7 (1980).
4. Richard Epstein, *Takings: Private Property and the Power of Eminent Domain* (Cambridge, Mass.: Harvard University Press, 1985).
5. The classic statement of this argument is found in E. K. Hunt, "A Radical Critique of Welfare Economics," in Edward J. Nell, ed., *Growth, Profits, and Property* (Cambridge: Cambridge University Press, 1980), 239–49.
6. Tibor Machan, "Pollution and Political Theory," in Tom Regan, ed., *Earthbound: New Introductory Essays in Environmental Ethics* (New York: Random House, 1984): 74–106; quotation at 97.
7. See John Hospers, "What Libertarianism Is," in Tibor Machan, ed., *The Libertarian Alternative: Essays in Political and Social Philosophy* (Chicago: Nelson Hall, 1974), quoting Rothbard, 15.
8. Jane S. Shaw and Richard L. Stroup, "A Skeptical Twist," *EPA Journal* 18, no. 4 (September/October 1992): 54.
9. See Robert D. Rowe and Lauraine G. Chestnut, *The Value of Visibility: Economic Theory and Applications for Air Pollution Control* (Cambridge, Mass: Abt Books, 1982), esp. 81.
10. Richard L. Stroup and John A. Baden, *Natural Resources: Bureaucratic Myths and Environmental Management* (San Francisco: Pacific Institute, 1983), 123.
11. Ibid. For a sample of these essays, see John Baden and Richard Stroup, eds., *Bureaucracy vs. Environment: The Environmental Costs of Bureaucratic Governance* (Ann Arbor: University of Michigan Press, 1981).
12. John A. Baden and Richard L. Stroup, "Saving the Wilderness: A Radical Proposal," *Reason* 13 (July 1981): 28–36.
13. For a good brief review of the literature on this question, see Joel A. Mintz, "Economic Reform of Environmental Protection: A Brief Comment on a Recent Debate," *Harvard Environmental Law Review* 15, no. 1 (1991): 149–64 (arguing that economic incentive and market schemes make beautiful sense in theory but often confront intractable technical, scientific, and legal difficulties).
14. For a classic study of the "capture" of air pollution control requirements by an alliance of dirty coal and clean air interests, see Bruce Ackerman and W. T. Hassler, *Clean Coal/Dirty Air, or How the Clean Air Act Became a Multibillion-Dollar Bail-Out for High Sulfur Coal Producers and What Should Be Done about It* (New Haven: Yale University Press, 1981).

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Peter C. Yeager

THE POLITICS OF EFFICIENCIES, THE EFFICIENCIES OF POLITICS: STATES VS. MARKETS IN ENVIRONMENTAL PROTECTION

In The Political Limits of Environmental Regulation: Tracking the Unicorn, *Bruce Yandle identifies some of the key weaknesses of federal environmental regulation, including its regressive effects, its tendency to better serve selected political interests than the cause of environmental protection, and the EPA's failure to follow sensible priorities. Additional problems may also be cited, including the tendency to exclude citizens' voices from deliberations regarding the degree of pollution control. But Yandle's conclusion regarding the likely superiority of decentralized and market-sensitive alternatives to centralized regulation is overstated. Any such alternatives necessarily will continue to be grounded in relatively uniform national standards. Moreover, in the context of American political economy, market-based controls would continue to deny many citizens real voice and choice. The quest continues to be for the combination of controls that best preserves both the environment and liberty.*

In late 1983 the federal Environmental Protection Agency was considering what air pollution controls to require of a copper smelting plant in Tacoma. The plant's operations created the highest levels of arsenic

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in the air in the United States. Faced with uncertainty as to the precise relation between exposure levels and cancer deaths (children in a school a block from the smelter had four times the normal level of arsenic in their urine), the agency decided to hold public hearings in the city to determine the local view of the appropriate tradeoffs. The maximum containment of the pollution, almost zero discharge, would likely close the plant at the cost of its 630 jobs, while a lesser level of control would leave the lung cancer risk at twice the national average (an estimated two cases per year in Tacoma).[1]

The decision to go to the public recognized critical facts and values. At the present stage of industrial development, there are often key tradeoffs between degrees of environmental protection and economic growth. And determination of the appropriate balances—difficult and contentious in the best of circumstances—is complicated further by scientific uncertainties regarding (especially) the chronic effects of environmental exposures to various levels of many toxic substances. Given this context, the federal agency sought to make the local community's views central to the government's decision in the case. While still far from the pure case of community decision making, this approach nonetheless had the virtue of recognizing (and partially implementing) the values of wide deliberation and local autonomy, programmatic linchpins in our political philosophy's twin emphases on liberty and democracy.

To this extent, at least, the EPA's approach was congenial to the premises and arguments set out in Bruce Yandle's book, *The Political Limits of Environmental Regulation: Tracking the Unicorn* (Westport, Conn.: Quorum Books, 1989). Formerly a senior economist on the President's Council on Wage and Price Stability (in 1976–77),[2] where he was responsible for evaluating the cost-effectiveness of the major regulations being proposed by the EPA, Yandle surveys 20 years of federal environmental regulation and—unsurprisingly—finds it wanting. He reviews evidence indicating the high costs and (barely) modest accomplishments of federal policy, and suggests the superiority of decentralized and more market-based approaches (as against those of centralized statism) on the grounds of both economic efficiency and the values of liberty and autonomy.

Faith in the efficacy of markets has, of course, only been strengthened in the wake of Communism's self-destruction in the former Soviet Union and Eastern Europe. But it should be noted that Yandle does not argue for the complete elimination of centralized state policy making for environmental protection—although the precise role he

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envisions for it remains uncertain. Rather, he simply insists that the balance of environmental regulation be fundamentally shifted from Washington to the states and localities—the instantiation of a true federalism—and that market-like mechanisms replace much of the command-and-control uniformity of present policies. The benefits, he believes, will show in gains to both the economy and the environment, and in the rescue of deliberation from powerful self-interested parties and its return to the true locus of commonweal: the local citizenry.

Much in the account rings true, all the more so in the present climate of economic constraint and of public cynicism regarding all things political. Indeed, politicians and (other) experts do not fare well in this telling; neither do big business or the leading environmental groups. As Yandle sees it, these various entities have combined to strip environmental protection of its true public-interest substance, and at the same time inflict significant damage on the nation's economy. He calls for something like a market-driven populism, or a populist-driven market—the preference ordering of these two commitments remains unclear.

But if much in Yandle's assessment of environmental policy is correct, the argument also contains some notable gaps, which are negotiated by leaps of faith. He clearly favors the increasing use of market-like mechanisms for environmental protection, such as those being presently applied under the Clean Air Act, in part based on the failures of present controls, in part on arguments for the superiority of markets in human affairs of all sorts. As it happens, however, his critique of the status quo is much more soundly based than is his case for the market, which shares some of the weaknesses of the EPA's approach in Tacoma.

Of Strange Bedfellows: Baptists and Bootleggers

Yandle writes that his book's purpose is to "explain why economically efficient controls are seldom, if ever, adopted and why so little progress is made in achieving environmental goals" (1). His search for answers is rooted in some key philosophical assumptions regarding human nature and social systems. To help build the case for market efficacy, he borrows Thomas Sowell's distinction between unconstrained and constrained views of humankind.[3] The unconstrained view, which Yandle associates with the sort of centralized "command-

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and-control" regulation that the EPA has administered for the past 20 years, is optimistic regarding the perfectibility of human life, and assumes that properly selected experts can find and impose solutions to social ills. The constrained view, on the other hand, places more faith in systems than in souls. As Yandle puts it, adherents of the latter view believe "that social systems evolve in complex ways that provide incentives for fallible people to achieve socially useful results, even when the social end is no part of the people's intentions" (12). This, of course, is the consequentialist "invisible hand" assumption of both classical economics and sociological functionalism. The good consequences that it claims include not only economic efficiency but broader social interests, such as the protection of the environment and other goods, including liberty and self-determination.

The markets of classical economics presume and reinforce rights in property, which are in turn systemically interwoven into the moral fabric of social life in a capitalist political economy; as a consequence, interference in such rights not only risks economic efficiency, but other social values as well. In one way of putting this, Yandle writes, "Property rights have historically emerged slowly on a piecemeal basis, and the enforcement of those rights usually rests at the community level. It is simply unbelievable that *commonly held community values*, the stuff that forms and protects property, could be reflected in uniform laws written for an area as vast and diverse as the United States" (10–11; emphasis added).

Notice that these arguments involve important empirical claims regarding the flawed nature of our species-being, the locus and nature of "community" sentiments, and the functions of institutional arrangements. These claims are more or less testable, and Yandle takes seriously the importance of testing them against the experience of our environmental regulation. His reading of the evidence is correct in many particulars, even if it doesn't always lead firmly to his ultimate conclusions.

He gets off to something of a slow start in this regard, however. With a very broad brush, he suggests that much of the sentiment behind the swell of American environmentalism in the early 1970s was anti-capitalist and anti-private property, rooted in the woolly-headed naïveté of youthful idealism, and that it led to an "environmental revolution."[4] This surely oversimplifies what was a much more complex social movement, and one that produced *evolutionary*—not revolutionary—change. After all, one would not have expected more from the middle classes, even from its daughters and sons who popu-

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lated much of the movement. At its core, the movement was *rights-based*, connecting it at once to both the nation's legacy of the defense of liberty and to prevailing institutional arrangements.[5] In ignoring this, Yandle has moved relatively fringe voices to the center of the cause. In the end, such a simplified view dichotomizes positions and choices, forcing one to choose caricatured sides.

An example of the sort of analytic overreaching this view can occasion is found in Yandle's interpretation of his own research on the environmental positions of states' congressional delegations (36–7). In examining legislative votes regarding the regulation of sulfur dioxide in 1977,[6] he was interested in the question of whether votes for stricter regulations reflected antipollution or anti-economic growth sentiment. But these choices are (too simply) dichotomous, and Yandle's multivariate statistical analyses do not (and could not) examine the question directly, forcing a broad inferential leap. That many representatives were antigrowth per se, even in 1977, seems unlikely at best.

To test for the possibility that they were, Yandle developed a statistical model to see which factors might predict (and explain) the environmental voting behaviors of the congressional delegations. As an indicator of the latter, he used the League of Conservation Voters (LCV) index, which gives a *general rating* of "the delegations' sensitivity to environmental issues" (37), and found that while the proportion of a state's population living in regions with high sulfur dioxide emission levels did not correlate with the LCV index ratings, states having low levels of industrial growth did correspond to legislators' greater "environmental sensitivities." Yandle concludes that these results "suggest the environmental movement was more about stopping industry than stopping pollution, at least in this case" (37).

But in the first place, the relation between the LCV index and the specific matter of interest—legislators' votes on sulfur dioxide regulation—remains unclear and unmeasured in the research. In the second place, cross-sectional data permit only rather weak inferences regarding cause and effect; covariation between two variables at one point in time cannot show causal priority (i.e., which one happens first?).[7] But most important, there are better speculative interpretations of Yandle's statistical findings. For example, it is altogether reasonable to surmise that states with low rates of *industrial* growth are either dominated by older—therefore highly polluting—technologies that are weak sources of economic growth, or that they have economies strongly based on service-sector industries such as tourism; in either case their citizens—hence their legislators—may, understandably, be

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more concerned than most to ensure environmental protection. In general, Yandle's imputations of anticapitalist sentiment to pro-environmental protection groups appear largely unsubstantiated.

Similarly, he radically oversimplifies the springs of action for the EPA, labeling it simply an "agent of Congress" (16) acting out that body's political impulses: "EPA responds to political pressure, which is partly affected by public perceptions of risks. In other words, EPA *does what Congress directs it to do*, and Congress has a complex agenda" (122, emphasis added).

It is, of course, correct to observe that the agency's work is politically influenced; it is also the case that the work is shaped by considerations other than rational ones of economic efficiency or even environmental protection (although these in fact are not irrelevant to the agency's practices). But the EPA's work, for good or ill, is shaped by a variety of forces, not all of them channeled through the legislature. Far from the relative limelight of lawmaking, in the arcane technical deliberations of courtrooms and administrative hearings, in the complex relations linking the agency to the states, to private groups, and to the executive branch of the federal government (which, curiously, Yandle omits from consideration despite its responsibility for creating, monitoring, and staffing the leadership of the agency), are to be found many of the large and small pressures on regulatory decision making. The various impacts of these pressures derive not only from the weight of the political forces behind them, but also from their institutional modes of transmission. If environmental regulation is indeed "captured," it is so in much more complex and dynamic ways than by Yandle's near-sighted Congress.[8]

He finds firmer ground in his arguments regarding the combination of interests often *served* by federal environmental regulation (as against his analysis of *motivating* interests). In particular, he notes the ironic confluence of interests often served by expensive, uniform (e.g., nationwide) business regulation: those of the public-interest-minded reformers and those, too, of at least segments of commerce, especially the larger, more powerful firms. The civic-minded reformers bring the moral language of commonwealth and rights to the struggle for regulation; Yandle labels them "Baptists." Powerful segments of industry, on the other hand, come to favor such regulation because of the economic benefits it can confer upon them; these are his self-interested "Bootleggers." They favor regulation when they discover that there are regulatory economies of scale through which legal requirements weigh more heavily on smaller competitors than on larger producers.

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The latter can spread regulatory costs over much larger volumes of production, and they are better able to negotiate both more favorable restrictions and less onerous sanctions when they violate them.[9] Thus, law can confer additional competitive advantages on already powerful economic interests. Yandle notes that the coalition of "Baptists" and "Bootleggers" is a forceful one. By implication, when the cause is abandoned by either party, regulation is less likely.

This is not a conscious conspiracy of interests, of course, although at places Yandle's language suggests the motivations of special interests behind the law, confusing intentions with effects.[10] Instead, it is what sociologists might call an example of a "structural convergence" of interests. Yandle's position is that the standard "command-and-control" regulation of the EPA much better serves a series of special interests than it protects environmental quality. Not only does such regulation confer advantage on powerful firms in particular; in general it can serve existing industry's competitive interests by creating barriers to entry. This occurs when regulatory law in effect sets higher standards for potential new firms than for existing companies, as has occurred under both the Clean Air and Clean Water acts. Nonexistent firms are in a poor position to lobby for regulatory forebearance, so differential pollution control standards have often had the effect of enhancing the property rights of existing polluters.[11]

Federal environmental law also serves industry's general interest in regulatory certainty; when engaged in strategic planning, it is simpler to anticipate and respond to a single set of rules than to 50 different regulatory regimes, to say nothing of the greater ease of lobbying a single legislature and agency. Finally, there may be outright subsidies to business in the law, as in practice there were under the foundational 1972 amendments to the Federal Water Pollution Control Act (now also known as the Clean Water Act), which provided billions of dollars for the construction of municipal waste treatment plants into which companies could discharge their wastes. Original provisions in the 1972 amendments that firms repay the federal government for their share of the construction costs (based on utilization of the facility), and also pay user fees to the municipalities, were often honored only in the breach.[12] Additional subsidies to industry came in the form of tax deductions for pollution control investments.

Yandle suggests that state and local politicians also benefit from centralized, uniform regulations, because such law reduces the chances that industries (and jobs) will leave their states for others with more

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lenient rules (although they may still leave for less restrictive foreign lands). Federal regulators, meanwhile, presumably enjoy their wide-ranging authority to control important public policy matters (and substantial budgets), while federal legislators and their staffs increase their own authority through Congress's budgetary and oversight roles and can dispense regulatory favors to constituents. And like industries, national environmental groups gain the political efficiencies of having to lobby but a single legislature while pursuing court-imposed remedies in a single court system; at the same time, they gain organizational strength from having a national base for members and dues recruitment, a base created when all the significant regulatory action is centralized in Washington.[13]

In all, this is a perceptive analysis of how narrower group interests can supplant the original goals of public-interest policies, in this case environmental protection: the law better serves various group interests than it does ecology, as measured by the quite modest improvements in air, water, and land quality. And with this Yandle completes the circle of his argument: While free markets convert individuals' self-interested behavior into the common good, governments work all too efficiently in the other direction, converting public-spirited policies into little more than spoils privately consumed at the community's expense.

Of States and Markets

Yandle does not intend to bifurcate the choices so simplistically, but his analysis strains in this hyperbolic direction. In the end, the case for the role of markets in environmental protection is not quite as strong as he would have it; neither is the case against centralized government rule making as airtight. Some admixture of these institutional controls will be required to protect both economies and ecology.

Yandle premises his case for a greater "market share" in regulation on a number of assumptions and arguments, some more firmly grounded than others. Among other things, he argues that federal regulation is greatly inefficient, delivering little benefit for high cost; he suggests that the environment of the United States (to say nothing of the nation's economy) may have been at least as well off had the country continued to pursue state and local regulation rather than the "nationalized" path it took with the spate of federal laws in the 1970s; and he assumes that decentralized controls will better reflect commu-

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nity values and priorities while better protecting market-generated economic efficiencies.

It is of course true that both the public and private sectors have spent heavily over the past two decades for environmental protection, and that the returns to ecology have fallen well short of stated goals. And research indicates that the opportunity costs of these expenditures have been at least significant in the form of lower productivity, somewhat higher rates of inflation, and the aforementioned regressive impacts on smaller companies, leading to closures and job losses in the worst cases. But the overall micro- and macroeconomic effects of environmental regulation have not been large.[14] Obviously, any expenditure is too high if in fact it has purchased nothing of value; this is a question typically addressed with the standard sort of cost-benefit assessment of public policies.

There are a number of important challenges to the standard assessments, however. In the first place, they tend to overlook some of the economic benefits that can attend regulation; the consequence is an overestimate of the economic costs. For example, studies commissioned by the federal government estimated in 1972 that pollution controls would force the closing of 200 to 300 smaller and marginally efficient factories between 1972 and 1976, costing between 50,000 and 125,000 jobs. While not an especially large impact, this nonetheless proved to be dramatically overstated. By 1981, EPA's "economic dislocation early warning system" reported that since 1971 153 plants had closed *in part* as a result of environmental regulation, causing the loss of 32,611 jobs for the decade. In the meanwhile, it was estimated that this regulation had *created* roughly 400,000 jobs over the same period in construction and the new pollution control industry, or roughly 12 for each job lost.[15] Moreover, James Koch and Robert Leone have suggested the nonobvious consequence that the requirements of the Clean Water Act may even have kept some plants open that otherwise would have closed, to the extent that the consequent price rises for their industry's products are sufficiently greater than their own increased costs of compliance.[16]

In the second place, the standard accounting necessarily underestimates benefits in a more fundamental way.[17] Cost-benefit logic necessarily *commodifies* human valuations, and where it can't it tends to undervalue them. In addition, it always tends to make short-term assessments, overlooking longer-term outcomes. In precisely these ways it reflects its origins in general economic logic. But aesthetic interests, the value of maintaining biodiversity, and the risks and costs

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to future generations from resource depletion simply defy quantification in monetary terms. These problems are similarly manifested in other, related forms of economic accounting: the same sort of blinkered view of the world is projected in such measures of national wealth and income as the gross national product. In computing GNP, consumption of natural resources such as oil and timber in production processes is treated as an economic gain rather than measured for its possible effects on long-term productivity (as a depletion of national wealth). Pollution, too, is counted as an economic asset in the GNP, not only because of spending on pollution control equipment but also because of higher health care spending due to environmentally caused illnesses.[18]

Even if they are not readily monetized, there remains the question of the environmental benefits achieved by federal rule making. And here Yandle makes two arguments: that they have been small, and that they would likely have been at least matched had the Congress not intervened in the policy trajectories of the states, localities, and regions prior to the 1970s. The first point is relatively unproblematic; the latter seems much less plausible.

Clearly, federal environmental law has brought some environmental benefits, from cleaner air and water to protected species and territories. But the record is a mixed one that falls well short of most statutory goals. In the case of the Clean Water Act,[19] for example, 20 years of federal law have resulted in significantly cleaner surface water in some regions, but not in others. In addition, these gains have come from reductions in conventional pollutants such as sediments and harmful pH concentrations discharged directly from factory and municipal pipes, but much less progress has been made to date against the more menacing toxic pollutants, and against indirect sources of water pollution such as urban and agricultural runoff. There are a number of reasons for this, some of which I discuss below. But one factor is clearly congenial to Yandle's interest-group thesis: under popular and congressional pressure to show quick results in the "Environmental Decade" of the 1970s, the EPA reversed the Clean Water Act's clearly stated priorities and moved first to regulate the more amenable conventional pollutants; presently, the regulation of toxic water pollution from industrial sources is 17 years behind the originally mandated schedule.[20] And the progress to date against such threats as acid rain, potential global warming factors, and depletors of the ozone layer has been more meager yet.

But it is most unlikely that the record would have been improved by

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the sort of state and local regulation that prevailed prior to the federal initiatives. Yandle presents his claim on this point in a largely speculative way: noting the empirical and analytic shortcomings that plague research into such effects, he relies largely on a single study whose findings suggest that progress in air pollution control (on at least some parameters) may have been better prior to passage of the Clean Air Act amendments of 1970 (142–3). Even if such a finding were demonstrable, however, it would not likely be generalizable to all (even most) forms of pollution control. And without a true experiment on the question, these findings could not prove that continued state and regional regulation would have done as well as or better than the federal legislation of the 1970s.

There is, moreover, much speculative evidence against Yandle's argument. In the case of industrial water pollution, for example, 25 years of postwar regulation at the state and regional levels accomplished very little indeed.[21] On the contrary, water pollution had markedly worsened by 1969, despite substantial spending for municipal waste treatment plant construction. In that year, a General Accounting Office study of several rivers concluded that although "$5.4 billion had been spent at all levels of government for waste treatment plant construction during the previous twelve years, the nation's rivers were in worse shape than ever before."[22] As another indicator of the problem, in the same year much of the several hundred million dollars spent on equipment produced by the relatively new pollution control industry went toward *purifying incoming water for manufacturing processes* rather than to cleaning outgoing discharges.[23]

In general, the water pollution story prior to federal regulation in 1972 was one of a hodgepodge of typically ineffective state regulations. Governors and state regulators commonly shied from aggressive enforcement of their own laws, fearing that this would drive the increasingly mobile factories of national corporations to more congenial "pollution havens" in less restrictive states. At the same time, given the increasing damage of growing pollution loads on the nation's waters, business leaders recognized both the legal uncertainties attached to decentralized regulation and the contradiction between voluntary corporate responses to industrial pollution and the economic demands of a competitive marketplace. As a Pittsburgh executive noted at the end of the 1960s, "We won't get this situation cleaned up except by laws that are enforced. If I correct my plant problems, but my competitor doesn't, that company has a competitive advantage. I have committed huge sums; they haven't. In fairness to my

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stockholders, therefore, I can't make that first move. I see no hope except for legislation."[24]

The survey that elicited this comment found the majority of executives looking to the federal government to rationalize what was becoming an uncertain and turbulent area of policy as environmental issues rose to the forefront of public consciousness. Almost three of five executives surveyed wished to see the federal government increase its regulatory activity in environmental law, and the majority of respondents favored a single national standard over a patchwork of state and local environmental restrictions, unevenly enforced.[25] The plea for leveling the competitive playing field and for regulatory stability was, of course, driven by the logic of a market economy. This logic is to be distinguished from the contradictory consequences of the differential impacts of government policy on large and small firms within industries and between existing and new facilities (effects Yandle does not prove are *large*), and from Washington's convenience as a single focus for the lobbying efforts of powerful firms and trade associations. The continuing question for public policy is whether the benefits of federal regulation in market rationalization can be had absent some potentially destabilizing economic effects.

Community Values or Market Imperatives?

In the spirit of true federalism, Yandle suggests, communities could themselves decide the proper tradeoffs between economic growth and environmental protection, as with the choices offered for consideration to the citizens of Tacoma. This is a proper goal, speaking to the virtues of deliberation, choice, and autonomy in civic life. The question is whether it can be reached, particularly in view of the current structures of our socioeconomic system.

Yandle notes that with growing concentrations of population and changing patterns of commerce during the period of industrialization, state courts and local politicians sometimes ruled against industrial polluters, especially when pollution risked the public health. In cases involving conflicting property rights, however, as when mining pollution destroyed long-established farming operations, courts often applied utilitarian logic in permitting the polluting activity to continue, reasoning that the industrial processes involved would bring greater ultimate wealth (46–8). Yandle indicates, accordingly, that before federal control of environmental regulation, pollution law

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reflected the rational operation of community choices in the context of varying circumstances, for

> not every state court arrived at the same conclusion. Nor did every city adopt ordinances at the same time. Different circumstances and public opinion regarding the relative merits of pollution were reflected when legal actions surfaced. In other words, experimentation was reflected across states. Individuals seeking to relocate a plant or a home could consider a large array of options and choose the one that best suited their preferences. (48)

Yandle's localism amounts to a protest against the presumed inflexibility of rigid national pollution control rules—in itself an agreeable position. But there is a more plausible reading than Yandle's view of the pre-federal regulation period of pollution law. If it can be said to have involved a greater measure of local decision making, there remains a serious question about the nature of the choices that were available to local citizens, particularly in the context of socioeconomic inequality. Such choices may be coerced in at least two ways: in citizens' general sense that the selection of healthy environments will come only at the cost of their livelihoods, or (often relatedly) when more powerful members of the community enjoy the benefits of production while the environmental risks fall largely to the politically (and economically) disabled groups. Such differential interests are bound to be reflected in the decisions of local politicians and judges alike.

Consider, for example, the deadly air inversion that trapped sulfur dioxide and other pollutants in the air surrounding Donora, Pennsylvania, in October 1948. At the end of this four-day episode, 20 people were dead (the normal death rate for the period was two) and 5,910 of the 12,000 residents had become ill, largely with respiratory tract infections that affected the elderly most heavily.[26] Despite the seriousness of the occurrence, the townspeople resisted aggressive air pollution control because of Donora's economic dependence on one of the major sources of the pollution, a large steel mill. As the town's newspaper editor explained,

> For almost since its founding right after the turn of the century, Donora lived of, by, and for its big steel mill. In fact, the community, you might say, was established because of the steel mill. This was bread and butter, it was the local economy, it was everything. The industry had a great deal to say about the political life of the community. So that I think there was some

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> understandable reluctance on the part of everybody to speak ill of the steel plant.[27]

This was a not uncommon regulatory dynamic in the period prior to federal regulation. So if Yandle finds the glass half full, in the image of citizens scanning a national countryside replete with numerous economic and environmental options variously encoded in law, it is important to keep in view the compulsion to choose between jobs and health, or between jobs and the roots, traditions and even expertise one may leave behind in search of safer livelihoods elsewhere. What Yandle pictures as individual mobility among diverse local value choices may better be depicted as situations in which economic concerns force unwanted sacrifices of non-economic forms of well-being onto virtually all communities and the individuals inhabiting them.

Against Yandle's brief for localized environmental controls, one final point should be made. The expressed preferences of local citizens, as reflected in community ordinances or local court rulings, are rarely likely to incorporate concerns for pollution effects "downstream," either geographically (the standard problem) or generationally. Yandle expresses hope that regional agreements will settle such matters, and they occasionally have, as he shows. More commonly, however, such cross-jurisdictional disputes have produced little more than interminable discussions, debate, and jawboning with few favorable environmental outcomes. This is the history, for example, of the many federally sponsored water pollution control conferences among disputing states during the 1950s and 1960s.[28] It was largely this record of regulatory sclerosis that spawned the federal legislation of the 1970s and the creation of the EPA. But these recent developments also reflect more basic processes in the evolution of the American political economy. The centralization of environmental (and other regulatory) policy in Washington paralleled the concentration of economic activity into ever fewer and larger companies in dominant industries as well as the nationalization and internationalization of markets; indeed, it was made inevitable by these processes. The mobility of both capital and pollution combined to necessitate at least some form of federal regulation, just as the increasing internationalization of each has now forced the highest-level diplomatic negotiations between nations regarding the future shape of international environmental law. The consequence is that regulation will not be fundamentally decentralized until and unless the control of capital is as well, which is of course to say that it will not be any time soon.[29]

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Regulation vs. Communitarian Values?

Notwithstanding the apparent inevitability of centralization, Yandle has, as I have already discussed, identified some of the weaknesses in federal environmental regulation and provided useful explanations for them. These include the law's regressive impacts, the EPA's failure to follow sensible priorities in pursuing its regulatory mission (a problem the agency itself has identified [121–2]), and an almost obsessive focus on the issuance of regulations at the expense of environmental quality monitoring (140–5), to say nothing of lax enforcement.[30] But in addition there are other features of environmental regulation important to an understanding of the limits and reach of this area of law. I shall use the example of the Clean Water Act, with which I am most familiar. While the regulatory regimens for different environmental media vary, from the statutory requirements to the implementing regulations, much of the water law's dynamics can be expected to characterize the EPA's environmental controls more generally.

Three points in particular are worth mention.[31] First, despite the language and intent of general uniformity in the statute itself, the implementation of the Clean Water Act over two decades has been characterized by a fair amount of negotiation about and variation in permitted pollution limits, even within industries. Presumably because it is so difficult to answer the question, "How clean is clean enough?" Congress intended that deliberation between the government, industrial dischargers, public interest parties, and private citizens—on costs, benefits, pollution loads, and technological potentials—be part and parcel of the regulatory process, from the writing of regulations to the granting of individual variances from them.

In addition, the EPA injected a good deal of regulatory discretion into the law where the statutory language appeared to permit none, a common feature in bureaucratic arrangements. For example, the agency has made sanctions against pollution violations discretionary rather than mandatory, the law's contradictory language notwithstanding. As it happens, the common enforcement response to violations of discharge limitations is either to ignore them (especially when they are episodic and not otherwise serious) or to negotiate terms of compliance. Pollution limits and timetables for compliance have also seen departures from intraindustry uniformity, particularly when permits have been issued in the absence of general regulations for some pollutants. In such cases, EPA agents use their "best professional judgment" to determine control levels for individual plants.

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And numerous variations and modifications of industry-wide rules have been allowed to individual firms, based on companies' showing of special factors justifying more lenient restrictions in their discharge permits.

As a practical matter, then, considerable flexibility and deliberation have been built into American environmental regulation. If not always permitting tight matches with variations in local circumstances and priorities, this result at least suggests more accommodation than is typically assumed to be the case with "command and control" regulation.

But the flip side of this flexibility is that the proliferation of decision points in the regulatory apparatus, and their common focus on such technical matters as the nature and potential of various technologies, privileges the voices of industry's managers and technical experts over those of environmentalists and other citizens.[32] For example, the heavy regulatory burden the water law placed on the EPA forced it to enlarge the law's discretionary realms, increasing the need for wide public inputs while—because of the very proliferation of decision points—making citizens' nontechnical input more difficult yet to ensure and provide. In sum, the formal deliberative process, while egalitarian in design, favors technical negotiations between industry and government experts. This inhibits the discovery of community choices and priorities, and helps tilt regulations toward the larger and more powerful industrial interests that can marshal the necessary expertise.

Finally, the Clean Water Act has been limited by its relation to industrial technologies. It has been technology-forcing only in the sense of requiring companies to meet the pollution limits achievable by the better and best (from the pollution control standpoint) of *existing technologies* in their respective industries. (The law does not force the adoption of these specific technologies, simply the meeting of their pollution discharge loads.) The government has itself not engaged in any significant research on environmentally cleaner technologies, nor sponsored it in the private sector. Similarly, the focus on extant technologies has arguably dampened industry's own initiative in this regard by reducing the incentives to leapfrog to the next generation of cleaner technologies. The result is environmental progress substantially short of its theoretical potential.

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The Limits of Markets

At the end of his book, Yandle insightfully identifies some of the forces likely to press for change in future environmental regulation. He notes that given the slow pace of cleanup, many environmental groups will begin to favor experimentation with some regulatory alternatives, including such market-logic devices as tradeable emission rights and offset policies, under which companies may add polluting facilities so long as *total* emissions do not exceed legal limits. Such devices, he suggests, provide the benefits of flexibility, economic efficiency and incentives for innovation so often shortchanged by what he refers to as the "monopoly regulator" of the federal government. And to some extent such regulatory options have "arrived": since the 1977 amendments to the Clean Air Act, the EPA has permitted some application of these devices, with some studies showing significant savings in the cost of controls (98–102).[33] (Presumably their longer-term advantages in promoting further improvements in environmental protection have yet to be demonstrated.) Such developments have not yet occurred in the regulation of water pollution, however.

Business interests, too, will press for change. Yandle notes that if present industrial firms have benefited from regulations privileging them over new (more competitive) facilities facing stricter controls, the evolution of technologies and markets will eventually find current companies on the other side of the ledger, facing the same controls when they seek to invest in new facilities and technologies.

Where all this stimulus for regulatory change will lead is another question entirely. In the abstract, there is little disagreement between citizens, mainstream environmental groups, and businesses over the combination of goals worth pursuing. These include, at a minimum, both economic and environmental health, and adherence to democratic principles and the rule of law. There will continue to be differences, however, over appropriate risks and benefits, and—importantly—over the distributions of these over time, place, and social groups.

A key question, therefore, is how these differences will be adjudicated. What are the appropriate and desirable roles for market-based incentive systems, and for centralized regulatory mechanisms? While Yandle's account has little good to say for the latter and expresses large hopes for the former, he appears implicitly to recognize the inevitability of a (federal) governmental role, perhaps even a useful one. For example, even offset and emissions trading policies presume legally

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established pollution limits, and there are good economic and environmental reasons for setting *relatively* uniform rules across jurisdictions.

In addition, there is the need to ensure maximum citizen input into the deliberative processes of regulation. Beyond its role in safeguarding autonomy and politically established rights, such input is necessary for establishing public choices and priorities. I have outlined some of the difficulties typically posed for participation by government regulation. But it also important to recognize the participatory limits of markets. For example, while markets for trading the right to pollute may achieve greater economic efficiencies and some overall environmental result, they may be deaf to the voices of people living near facilities that have purchased the right to emit greater amounts of pollution.

In some cases there is even an argument for central government to do more than at present. Here I have in mind the rather draconian choice offered to the citizens of Tacoma. Given the government's failure to invest in environmental research and development, and to provide for (or stimulate) industrial relocation policies, these citizens faced a very limited and arguably mean set of options. As in the period prior to federal regulation of pollution, they were left to choose between jobs, health risks, or costly dislocation. That they were permitted to deliberate this choice is an advance toward communitarian values. That the choice was so constrained, however, limits liberty, upon which true community is built.

NOTES

1. This case brief is taken from Peter C. Yeager, *The Limits of Law: The Public Regulation of Private Pollution* (New York: Cambridge University Press, 1991), 326. It was originally reported in Jerry Ackerman, "Jobs and Health: EPA Wants Tacoma to Help Decide What to Do About Arsenic from Plant," *Boston Globe*, Nov. 2, 1983, 1. EPA did something similar in 1988, when it offered for public comment four alternative proposals for controlling benzene, a widely used chemical known to cause leukemia. Each proposal was associated with a different level of cancer risks to the population—from 1 in 170 over a lifetime to 1 in 1 million—with increasing estimated costs to industry. See Philip Shabecoff, "EPA Asks Comment on 4 Plans to Limit Toxic Benzene Emissions," *The New York Times*, July 21, 1988, A16.
2. Now Alumni Professor of Economics at Clemson University.
3. Thomas Sowell, *A Conflict of Visions* (New York: William Morrow, 1987).

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4. For example, Yandle writes that "the high-pitched public argument put forward by some environmentalists in the 1970s was so convincing that private property and capitalism as an economic process became suspect. Before the environmental revolution, many had lauded the uplifting qualities of the market and the incentives it provided its participants to consider all costs in their decision making, including environmental ones" (3). Similarly, he describes the 1970s as a period "when the environmental movement was fundamentally an antibusiness movement," (114) an undocumented claim.
5. My own account of the origins and nature of the environmental movement is found in *The Limits of Law*, ch. 4. To be sure, its rhetoric was tinged with the antiestablishment cynicism that attended other youthful movements of the time on college campuses. But the heart of each was rights-based and not anti-property or even anti-profit as such. From the start, the environmental movement's leadership focused its efforts in the courts and the legislatures—especially the Congress—institutions not noted for particularly anticapitalist sentiments or policies. See, e.g., Peter Borrelli, "Epiphany: Religion, Ethics, and the Environment," *Amicus Journal* 7 (Winter 1986): 34–41; "Environmentalism at a Crossroads," *Amicus Journal* 9 (Summer 1987): 24–37; and Tom Turner, "The Legal Eagles," *Amicus Journal* 10 (Winter 1988): 25–37.
6. Yandle is particularly interested in the question of greater state versus federal control over variances from the regulations. He assumes environmental groups would favor federal control, because it is more efficient to lobby one set of regulators (at the EPA) than it is to lobby in the separate states. Proponents of industrial growth, on the other hand, should favor state-level control because they might more effectively lobby economy-sensitive governors for variances than they could the more distant federal regulators (36).
7. Time-series data are required for strong inferences of this sort.
8. For the classic formulation of the "capture theory" of regulation, see Marver H. Bernstein, *Regulating Business by Independent Commission* (Princeton, N.J.: Princeton University Press, 1955). For critiques of his argument that regulation becomes captured by industrial interests, see, for example, Paul Sabatier, "Social Movements and Regulatory Agencies: Toward a More Adequate—and Less Pessimistic—Theory of 'Clientele Capture,'" *Policy Sciences* 6 (1975): 301–42; Kenneth J. Meier and John P. Plumlee, "Regulatory Administration and Organizational Rigidity," *Western Political Quarterly* 31 (March 1978): 80–95; John P. Plumlee and Kenneth J. Meier, "Capture and Rigidity in Regulatory Administration: An Empirical Assessment," in J.W. May and A.B. Wildavsky, eds., *The Policy Cycle* (Beverly Hills, Cal.: Sage, 1978), 215–34; Peter J. Freitag, "The Myth of Corporate Capture: Regulatory Commissions in the United States," *Social Problems* 30 (April 1983): 480–91.

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9. "We should recognize that groups like the Environmental Defense Fund and the Sierra Club, to name two, are vital to the passage of clean air legislation. We should also recognize that the support of those groups can be quite valuable to polluters who seek a particular form of regulation, a form that may raise their competitors' costs or in other ways improve the future profits of an industry group" (38).

   It also appears that larger firms have less to fear from law *enforcement* when violations are discovered, just as they are advantaged in the cost-impacts of uniform rules. See, e.g., Marshall B. Clinard, Peter C. Yeager, Jeanne M. Brissette, David Petrashek, and Elizabeth Harries, *Illegal Corporate Behavior* (Washington, D.C.: National Institute of Law Enforcement and Criminal Justice, U.S. Department of Justice, 1979); Marshall B. Clinard and Peter C. Yeager, *Corporate Crime* (New York: The Free Press, 1980); Peter C. Yeager, "Analyzing Illegal Corporate Behavior: Progress and Prospects," in William C. Frederick and Lee E. Preston, eds., *Business Ethics: Research Issues and Empirical Studies* (Greenwich, Conn.: JAI Press, 1990), 165–92; and Yeager, *The Limits of Law*, ch. 7. For supportive results in other regulatory contexts, see Neal Shover, Donald A. Clelland, and John Lynxwiler, *Enforcement or Negotiation: Constructing a Regulatory Bureaucracy* (Albany: State University of New York Press, 1986); Keith Hawkins, *Environment and Enforcement: Regulation and the Social Definition of Pollution* (New York: Oxford University Press, 1984) (on environmental controls in Britain).

   Larger companies also have at least a small advantage in negotiating more lenient controls on their factories (as compared to smaller firms), leading to somewhat reduced violation rates; see Yeager, *The Limits of Law*, ch. 7.

   Yandle (72) cites Frederick R. Anderson and Allen V. Kneese on the argument that existing firms can more easily escape compliance and enforcement than can new facilities. I simply add here that larger existing companies have similar advantages over smaller ones.

10. At other places, Yandle is careful not to argue specific intentionality, as at page 74: "There is no clear evidence that industrial firms fought for higher new source standards that would limit entry of new competition. But they did not have to. Environmentalists did the job for them." Here he posits a convergence of interests in line with his theory of "Baptists" and "Bootleggers," leaving open the questions of intention and political action.

11. Yandle notes that the regulation under the Clean Air Act created barriers to new competition by providing more stringent regulations for new (as against existing) sources of pollution, when it disallowed further development in areas that had failed to meet national air quality standards (no longer always the case), and when the law forbid deterioration of air quality in regions where the air quality surpassed the national minimums (the "prevention of significant deterioration" ruling). Yandle refers to such

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results as creating new property rights, for both environmentalists (in the form of more protected environments) and polluters. The Clean Water Act's new source standards have arguably had some similar effects.

12. In late 1980, President Carter signed a law that repealed the cost-reimbursement provision for treatment plants funded to that point, while the 1977 amendments to the Clean Water Act exempted from cost-sharing plants discharging less than 25,000 gallons per day into a municipal facility. In addition, a 1981 General Accounting Office study found that most municipalities were not charging adequate user fees to industry, and also suggested that in some cases industrial users were being charged less than residential users. See Yeager, *The Limits of Law*, 247.
13. Yandle (144–5) also notes that Congress and the EPA have provided monetary support to a number of national environmental organizations, funding however that was radically reduced in the early 1980s by the Reagan administration.
14. For example, Yandle cites studies indicating (a) that government regulation of business, including environmental law, contributed about 15 percent of the "overall slowdown in labor productivity" in the mid-1970s, and (b) that the EPA and the federal Occupational Safety and Health Administration together accounted for 39 percent of productivity loss in the 1970s (132). Other research has indicated much smaller effects. For example, a Brookings Institution study estimated that environmental regulations reduced economic output in the mid-1970s by 0.15 percent, while a congressional report at the end of the decade found that studies showed environmental laws reducing the annual rate of productivity growth from between 0.1 percent and 0.25 percent, the latter considered unreliably high. The report noted that most studies of capital investment attributed only a minor role to environmental regulations. See Yeager, *The Limits of Law*, 246–50.
15. See ibid., 249.
16. James C. Koch and Robert A. Leone, "The Clean Water Act: Unexpected Impacts on Industry," *Harvard Environmental Law Review* 3 (1979): 84–111.
17. Yandle notes the commonly recognized problem that costs of regulations are much more easily estimated than are the benefits. But he gives the fact a particular political-economic "spin": "The discussion here suggests that neither category of effects can be estimated with precision, but that there are greater incentives to estimate and report costs than benefits" (146). This is in keeping with his argument that, for example, environmental groups are relatively unconcerned with environmental results so long as present arrangements meet their organizational requirements for resources and power, an overstated but not irrelevant claim (see below).
18. See Yeager, *The Limits of Law*, 326; and Philip Shabecoff, "The Environment," *The New York Times*, June 29, 1989, B7. Compare the economistic

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practice of valuing the loss of human lives in terms of lost returns to labor.

19. See, e.g., Yeager, ibid., chs. 6 and 8.
20. Ibid., ch. 6.
21. For an extended discussion of the 1948–1972 period, see ibid., ch. 3.
22. *Examination into the Effectiveness of the Construction Grant Program for Abating, Controlling, and Preventing Water Pollution* (Washington, D.C.: U.S. General Accounting Office, 1969); as quoted in A. Myrick Freeman, III, and Robert H. Haveman, "Clean Rhetoric and Dirty Water," in Walt Anderson, ed., *Politics and Environment: A Reader in Ecological Crisis*, 2nd ed. (Pacific Palisades, Cal.: Goodyear Publishing, 1975).
23. *Business Week*, October 4, 1969, 118; as cited in David Zwick and Marcy Benstock, *Water Wasteland* (New York: Grossman, 1971), 52.
24. Quoted in Robert S. Diamond, "What Business Thinks about Its Environment," in *The Environment: A National Mission for the Seventies*, by the editors of *Fortune* (New York: Harper & Row, 1970), 55–64.
25. Ibid.
26. Melvin A. Benarde, *Our Precarious Habitat: An Integrated Approach to Understanding Man's Effect on His Environment* (New York: Norton, 1970), 183–4.
27. Harry Pore quoted in Wesley Marx, *Man and His Environment: Waste* (New York: Harper & Row, 1971), 96.
28. See, e.g., Yeager, *The Limits of Law*, ch. 3.
29. Even if such major socioeconomic reordering were to occur, the migration of pollution effects would continue to require broader regulation than that to be found in local communities; at a minimum, regional compacts would be necessary.
30. See, e.g., Yeager, *The Limits of Law*, chs. 6, 7, 8; also Peter C. Yeager, "Structural Bias in Regulatory Law Enforcement: The Case of the U.S. Environmental Protection Agency," *Social Problems* 34, no. 4 (October 1987): 330–44. Under the failure to enforce the laws adequately, I include the EPA's failure to adequately enforce operation and maintenance standards for pollution control equipment once installed by dischargers. For additional evidence of such problems, see *Environmental Enforcement: Penalties May Not Recover Economic Benefits Gained by Violators*, Report No. GAO/RCED-91-166 (Washington, D.C.: U.S. General Accounting Office, 1991); *Water Pollution: Stronger Efforts Needed by EPA to Control Toxic Water Pollution*, Report No. GAO/RCED-91-154 (Washington, D.C.: U.S. General Accounting Office, 1991); *Water Pollution: Improved Monitoring and Enforcement Needed for Toxic Pollutants Entering Sewers*, Report No. GAO/RCED-89-101 (Washington, D.C.: U.S. General Accounting Office, 1989); *Water Pollution: More EPA Action Needed to Improve the Quality of Heavily Polluted Waters*, Report No. GAO/RCED-89-38 (Washington, D.C.: U.S. General Accounting Office, 1989). This profusion of GAO audits is a separate indicator of present regulatory difficulties at the EPA.

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31. This brief discussion is digested from Yeager, *The Limits of Law*, especially chs. 5–8.
32. See, e.g., U.S. Senate, *Study on Federal Regulation*, vol. 3 (Washington, D.C.: U.S. Government Printing Office, 1977).
33. In early 1992, air quality regulators in heavily polluted Southern California announced a proposal to permit the trading of emissions rights between companies; if approved, the plan would take effect in 1994. Under the plan, companies that reduced their emissions under required levels could sell the difference to firms that found meeting the same restrictions either unfeasible or not cost-effective. See Richard W. Stevenson, "California Proposal Would Let Industry Sell Pollution Rights," *The New York Times*, January 30, 1992, A1.

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Kristin Shrader-Frechette

SCIENCE, DEMOCRACY, AND PUBLIC POLICY

Experts often tout highly subjective methods of policy analysis as scientific and value-free. In The Myth of Scientific Public Policy, *Robert Formaini exposes the uncertainties in two of these methods, cost-benefit analysis and risk assessment. Because of these deficiencies, he concludes that ethics and political philosophy, not science, are the proper foundation for public policy. While Formaini is right to emphasize the value-ladenness of cost-benefit analysis and risk assessment, his rejection of scientific methods of policy analysis is questionable. His criticisms, especially in his study of the swine-flu case, seem to establish that experts have misused such methods, not that the methods themselves are seriously flawed. Also, his rejection of cost-benefit analysis and risk assessment would be more realistic if he offered a well-developed alternative to these two methods. One such alternative, for example, is ethically weighted cost-benefit analysis.*

Courts executed more than a million "witches" during the fourteenth through the sixteenth centuries. Scientist Alvin Weinberg, widely regarded as the "father of commercial nuclear energy" in the United States, claims that witch hunts subsided only after the Inquisitor of Spain convened a group of experts who proclaimed that there was no proof that "witches" caused misfortune. Similarly, charges Weinberg, our current "environmental hypochondria" is like the hysteria that drove witch hunts. Unfortunately, he complained, only experts realize

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that there is no proof that "environmental insult" causes "real health problems." Weinberg concludes that risk assessors and public policy-makers need a new Inquisitor who is able to bring the public to its senses.[1]

Observers of public policy regarding technological risk often tend to side either with the scientific experts—like Weinberg—who reassure us about safety, or with laypersons and environmentalists who are risk averse. Claiming to be victims of technological oppression, the populists (whom Weinberg would call "witch hunters") make at least two charges. One is that alleged expert opinion about risk is often subjective and driven by corporate interests. The other charge is that technologically induced risks, like those from commercial nuclear fission, are quite high. They note, for example, that the U.S. Office of Technology Assessment has concluded that up to 90 percent of all cancers are "environmentally induced" and hence "preventable."[2]

Robert Formaini's book, *The Myth of Scientific Public Policy* (New Brunswick: Transaction, 1990), aims to establish that "any society that has accepted without question the policy decisions of its intellectual elites has invited their corruption" (3). In order to show how the policy techniques of these elites fail, he gives an overview of risk assessment and its associated uncertainties and subjectivities (Chapter 1); traces the development of the Austrian school of economics (Chapter 2), forerunners in recognizing the role of subjectivity in science; and critically evaluates cost-benefit economics and its neoclassical foundations (Chapter 3). After these excellent theoretical analyses, he investigates an alleged failure in the application of risk-assessment and cost-benefit techniques: the decision of the U.S. government to inoculate people against the swine flu in 1976 (Chapter 4). In a brief, four-page postscript, he claims that, given the failure of the policy methods he has analyzed, "ethics, morality, political philosophy . . . are the proper foundations upon which to erect the edifice of public policies," not science (96).

The strength of *The Myth of Scientific Public Policy* lies in its contention that values and philosophy, rather than science alone, ought to guide policy. At least since the time of Thomas Kuhn,[3] we have realized that science is unavoidably value-laden. Hence, Formaini is right to argue that policy based on science is likewise value-laden. Formaini also deserves praise for his commitment to the people, not the experts, as the final arbiters of how to allocate risk and welfare.[4] The greatest asset of the volume, however, is its careful analysis of the swine-flu case. The author provides enough details and insights to produce an

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overview of this policy problem (whether to inoculate) that is both interesting and comprehensive. Allegedly a case of scientific decision making, Formaini shows that the swine-flu fiasco was an example of bungling, personal agendas, overconfidence, and insensitivity (70).[5]

Are Analysts or Analytical Techniques the Problem?

Despite the many facts amassed in his study of the swine-flu case, however, Formaini's use of this extended example also presents perhaps the greatest conceptual problem for the book. He claims that the purpose of examining the case "is to demonstrate that, contrary to expectations, neither risk assessment nor cost-benefit analysis proved useful to decision makers faced with a potential health crisis in 1976" (67). His actual arguments, however, do not meet this purpose. Instead, they show that some persons *applied* these two techniques badly, but not that—even in the swine-flu case—the techniques were fatally flawed. He admits, for example, that "official [government] use of the two techniques was not necessarily accomplished in the usual way" (68), and that government risk assessors ignored many important factors in evaluating inoculation (89). He also points out that Albert Sabin and the insurance industry had correctly assessed the risks of inoculation, even though government experts "understated these risks" (75, 81). Formaini explains that part of this understatement may have occurred because the head of the Center for Disease Control (CDC) at the time was engaged in "empire building" and in the "hysterical" promotion of inoculation (77, 79). In other words, Formaini's analysis demonstrates "a misuse of techniques as applied to a paucity of evidence" (93). Misused techniques and too little data, however, do not establish another of Formaini's conclusions, that "neither risk assessment nor cost-benefit analysis proved useful to decisionmakers" (67). They show that the analysts, but not necessarily the analytical techniques, were at fault.

Of course, it is true that the application of risk assessment and cost-benefit analysis is often seriously flawed.[6] It is not true, however, that "the *techniques themselves* still produce inaccurate results" (11). Nor is it true that "scientifically based (i.e., *justified*) public policy . . . is a myth, a theoretical illusion" (1). Rather, the more reasonable position is that, despite the flaws in the application of risk assessment and cost-benefit analysis, and despite the ways in which the applications of the two methods need to be improved, scientifically based public policy is both

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possible and necessary. Indeed, scientifically based cost-benefit analysis is used daily to determine efficient processes and policies.

In denying the possibility of scientifically based public policy, Formaini appears to believe that, because of the flaws in risk assessment and cost-benefit analysis, analytic or scientific policy techniques are not "useful" (67). On the contrary, one reason why recognition of the problems with risk assessment and cost-benefit analysis is a *necessary*, but not a *sufficient*, condition for inferring that they ought not be used in policymaking is that they provide at least some benefits to society. If properly used, they can help make decisions more rational than they might have been. For example, cost-benefit analysis enables policymakers to recognize efficient policies, to estimate the value of tradeoffs, and to cope with externalities. It is essential for providing estimates of social costs, so that prices can be set equal to marginal costs. Government then can set standards to regulate output and to determine the optimum size of projects. If cost-benefit analysis were rejected as a part of decision making, then we would have to abandon not only techniques used for recognizing efficient policies, for regulating externalities, and achieving for social benefits such as traffic control, but also the means of ensuring competitive pricing.[7]

In simply assuming that the flaws in cost-benefit analysis and risk assessment are sufficient grounds for rejecting both techniques, Formaini fails to take account of the fact that *any* theory of decision making, not just cost-benefit analysis and risk assessment, leaves some phenomena unaccounted for. Any opponent of any theory—even in science—is always able to charge that it cannot account for some important phenomenon. This is because any theory must employ simplifying assumptions that have a "residual" not accounted for by the theory of which they are a part. Hence, to focus merely on the deficiencies of analytic techniques misses the point. The point is which residuals are more or less important, and which theories are more or less deficient.

Formaini has not provided convincing grounds for rejecting risk assessment and cost-benefit analysis because he has failed to address the benefits of using an explicit, clearly defined decision technique. He appears also to overestimate the possibility for rational policy making when no analytic procedure such as cost-benefit analysis or risk assessment is used. Only through the use of such procedures do we become aware of how much current policy is arbitrary and based on purely political or otherwise subjective considerations. At least in the sense that its component techniques and underlying value judgments

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are capable of being known and debated, use of an analytic decision procedure—like cost-benefit analysis or risk assessment—is rarely arbitrary in a methodological sense, although it may be controversial in a substantive sense. For example, a decision (based on cost-benefit analysis) to use a particular technology for storing U.S. high-level radioactive waste at the proposed Yucca Mountain (Nevada) facility may be *substantively* controversial in the sense, for instance, that different persons have opposing views on how much risk is acceptable. If the cost-benefit techniques are applied properly, however, the conclusion would not be *methodologically* arbitrary, in the sense that someone who examined all the calculated costs and benefits would be able to understand the basis of the claim that a particular decision was beneficial. A proper cost-benefit analysis is not methodologically arbitrary at least inasmuch as its decision criteria, however faulty, are explicit; the bases for its conclusions, including the numbers assigned to particular values, are there for everyone to see and evaluate. In this respect, analytic techniques, which provide more information, more analysis, and a known method (however flawed) of evaluation, can contribute to democratic processes of policy making, despite their flaws. Surely, policy making should not proceed without knowledge of risk probabilities, however flawed, and without knowledge of various costs and benefits, however deficient. Hence we should improve the use of analytical methods, not reject them. To reject them, moreover, would amount to a self-fulfilling prophecy that analytical decision making was impossible.

The pragmatic assets of an analytic decision-making scheme like cost-benefit analysis are clear if one considers an example. Suppose citizens were debating whether to build a facility to store hazardous waste in their city. Suppose, too, that a cost-benefit analysis was completed for the project and that the benefits were said to outweigh the risks and costs of the project by one million dollars per year, when nonmarket, qualitative costs were not taken into account. It would be very difficult for citizens to decide whether the risks and costs were offset by the benefits. But if one hypothetically assumed that 50,000 families in the vicinity of the facility each suffered qualitative risks and costs—for example, increased traffic congestion and threats of groundwater pollution—worth $20 per family per year, then the decision would be easier to make. It would be much easier to ask whether it was worth $20 per family per year to be rid of the pollution threat and the traffic than it would be to ask whether, in the abstract, the benefits outweighed the costs of the hazardous waste facility. Formu-

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lating the problem in terms of hypothetical monetary parameters, and using an analytic scheme to make a cardinal estimate of one's preferences, appears to make this particular problem of social choice and risk assessment much more tractable.

Moreover, one need not believe that the hypothetical dollars assigned to certain risk-assessment or cost-benefit parameters are "objective" or "accurate," as Formaini suggests (11). Indeed, most good economists, such as Mishan (7), Kneese (10), or Sen (11), believe that the results of risk assessment or cost-benefit analysis are not completely accurate. Rather, they believe that cost-benefit preference ordering is merely a *useful device* for suggesting what individuals might "trade off" for safety or for amenities. Hence it may often yield insights about preferences and about constraints on public choices. Admittedly, risk assessment and cost-benefit analysis cannot and ought not tell us about processes of valuation that guide our social choices. Only the public can and ought to do that, as Formaini is correct to recognize. Rather, the goal of cost-benefit analysis and risk assessment is to provide relevant information about preferences—information that is useful for rational, democratic debate. Hence, any decisive argument against either technique cannot merely fault its admitted inability to enlighten us about the values that guide choices. Neither risk assessment nor cost-benefit analysis is a substitute for moral philosophy, and its informed proponents do not claim that it ought to be. The two techniques are merely ways to elucidate problems within moral philosophy and social choice. They are two ways to clarify and facilitate democratic decision making, to systematically compare the diverse risks, costs, and benefits associated with different projects and proposals.

In forcing us to order our preferences, both techniques (and especially cost-benefit analysis) force us to clarify the values that guide our choices. They also provide a formal calculus that is in principle capable of being interpreted in terms of many value systems. It is not the fault of a calculus that an analyst applies it in terms of values that we do not accept. Formaini appears to ignore some of the advantages of risk assessment and cost-benefit analysis because he believes that policy must be *either* scientific *or* democratic. In reality, however, the only good policy is both. Democratic policy without science is blind. Scientific policy without democracy is totalitarian.

Perhaps one reason behind Formaini's underestimating the importance of scientific techniques is that he occasionally gets his science and his facts wrong. For example, he discusses "Type-I and Type-II error

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in statistical theory, where reduction of the probability of committing one type of error merely increases the chances of committing the other" (17). This is false. Although reducing Type-I error increases the probability of Type-II error, it is *not* the case that reducing Type-II error increases the probability of Type-I error.[8] Formaini's mistake here is important because the costs of Type-I error are typically borne by industry or by risk imposers, whereas the costs of Type-II error are typically borne by the public. Understood correctly, Type-II risks sometimes can be reduced, thereby benefiting the public, without increasing industry risk costs. Formaini, however, incorrectly assumes that risk reductions benefiting the public always impose costs on industry.

Likewise, Formaini errs in discussing the WASH-1400 probability of a nuclear core melt. He states that "the probability was not significantly different from zero" (20). Formaini's claim represents a serious error, both because he gives no page citation to WASH-1400, and because there is no such probability (close to zero) for core melt in WASH-1400. According to WASH-1400, the core-melt probability for one reactor for one year is 1 in 17,000, whereas the core-melt probability for all U.S. reactors for 30 years is 1 in 4.[9] Both numbers are quite high risk figures, not close to zero, as Formaini claims (20). Indeed, even the 1 in 17,000 figure is two orders of magnitude *higher* than the level of risk typically regulated by the U.S. government. Similar factual problems occur throughout the book. They suggest that appeals for populist decision making, without reliance on careful science, could be blind.

Injecting Ethics into Policy

Critics of risk assessment and cost-benefit analysis, like Formaini, need to do more than repeat well-known criticisms of the techniques. Virtually all policymakers agree that these two methods have flaws. The real question is whether alternatives to these two techniques provide better vehicles for policy making, i.e., whether the alternatives to them are less flawed. The answer to this query is not clear from *The Myth of Scientific Public Policy*, since the author spends only a couple of pages, in a final postscript, claiming that ethics and political philosophy, not analytic techniques, are the proper tools for policy making. Formaini neither discusses the particulars of these alternatives nor considers the possibility that they may be more flawed than risk assessment and cost-benefit analysis.

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Formaini is right, of course, when he writes that "no cost-benefit study was done to examine whether or not the costs of allowing police to search at will outweighed the benefits of restricting them in that endeavor" (96). Our ethical principles often do trump economic analysis. In most controversial cases, however, the relevant ethical principles are not clear. Either the ethical principles themselves are so vague and general as to provide little guidance in specific situations, or, several ethical principles appear applicable, and their priority is not easily determined. In all such situations, sustained political and ethical evaluation is required in order to resolve controversial issues of public policy. There is no ethical "quick fix," and Formaini does not explain how to accomplish this evaluation. His four-page postscript provides little help. For the critic of risk assessment and cost-benefit analysis, the task is not only (1) to outline how and why these two techniques have failed, but also (2) to tell us how to incorporate ethical and political analyses within the framework of public decision making, and (3) to argue that this incorporation would be likely to correct some of the flaws associated with the two analytic techniques of policy making. In *The Myth of Scientific Public Policy*, Formaini has not fully completed the second and third of these tasks, although he has accomplished the first.

One possible way to bring about the integration of ethics and political philosophy into public policy making, as Formaini proposes (96) but does not elaborate, would be to use alternative ethical and political weighting schemes for both risk assessment and cost-benefit analysis. Such weighting schemes could take account of rights, for example, by assigning a negative weight or cost to particular risks or technologies that threatened given schemes of human and legal rights (e.g., to equal protection, to informed consent, or to property). In other words, threats to our values and ethics—as well as to our health and lives—could be incorporated into cost-benefit analysis and risk assessment.

Admittedly, neither cost-benefit analysis nor risk assessment can tell us what ethical weights to impose. Both techniques, and especially cost-benefit analysis, are formal calculi amenable to the weights dictated by any ethical system. Their purpose is to help us clarify our ethical values as a society, not to dictate them. Hence, perhaps the best way to use cost-benefit analysis, for example, would be to have different interest groups prepare alternative cost-benefit analyses, each with different ethical weights to reflect their different views of the importance of safety, liberty, and so on.[10] The public or its representatives could then decide which weighing best represented its values. Because

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a number of scholars have argued that cost-benefit analysis ought to be weighted by various parameters, I shall not repeat those arguments here.[11] The crucial point is that teams of analysts, including ethicists and members of various academic, industrial, government, and public-interest groups, ought to be responsible for devising alternative, ethically weighted cost-benefit analyses. Once these were completed, normal democratic procedures—judicial or administrative hearings, for example—could be used to choose the cost-benefit analysis most in keeping with the values of the public.

Using a system of ethical weights would be valuable because it would enable the public to see that cost-benefit analysis, alone, does not reveal socially desirable policy. Economists rarely have claimed that it does. Alternative, ethically weighted analyses would underscore the fact that good policy is not only a matter of economic techniques, but also a question of ethical evaluation. They would also reveal how the chosen measures of social risks, costs, and benefits might respond to changed value assumptions. The weighted analyses could function as an ethical model for sensitivity analysis. In this way, citizens might be able to exercise more direct control over the values to which policy often gives indirect and illegitimate assent. Citizens might be able to correct some of the misuses of policy that Formaini illustrates in his study of the swine flu case. Indeed, Formaini's own detailed treatment of this case is an excellent example of the sort of evaluation and analysis that would be necessary to inform a system of weighted cost-benefit analyses and risk assessments. Formaini's case study does not support the conclusion—about the lack of utility of analytic techniques—that he advances, but it is rich with insights, particularly in the area of tort liability and the insurance-industry assessment of the swine-flu risk. As Formaini argues so cogently, the fact that private insurers refused to cover the inoculation program is forceful evidence that perhaps the program ought not to have been promoted or, at least, that it was riskier than the government ever admitted.

One of the important questions raised by the policy mistakes in the swine-flu case is how the government was able to press its own position, despite the contradictory evidence about the safety and effectiveness of the vaccine. Formaini's investigation points clearly to the corruption of scientific and policy elites, a corruption that has been chronicled again and again, from Iran-Contra deals that traded arms for hostages to Department of Energy mismanagement of the Fernald, Ohio, nuclear materials plant. The question now is how to change

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policy making for the future, not merely to chronicle the mistakes of the past.

NOTES

1. A. Weinberg, "Risk Assessment, Regulation, and the Limits," in *Phenotypic Variation in Populations*, ed. A. Woodhead, M. Bender, and R. Leonard (New York: Plenum, 1988), 121–8.
2. For the 90 percent figure, see J.C. Lashof et al., Health and Life Sciences Division of the U.S. Office of Technology Assessment, *Assessment of Technologies for Determining Cancer Risks from the Environment* (Washington, D.C.: Office of Technology Assessment, 1981), 3, 6 ff.
3. Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970).
4. See Kristin Shrader-Frechette, *Risk and Rationality: A Philosophical Defense of Populist Reforms* (Berkeley: University of California Press, 1991).
5. See Roger Cooke, *Experts in Uncertainty* (New York: Oxford University Press, 1991).
6. See D. W. Pearce, "Introduction," in *The Valuation of Social Cost,* ed. D. W. Pearce (New York: Allen and Unwin, 1978). See also Kristin Shrader-Frechette, *Science Policy, Ethics, and Economic Methodology* (Boston: Kluwer, 1985).
7. E. Mishan, *Cost-Benefit Analysis* (New York: Praeger, 1976), 383.
8. B. W. Lindgren, *Statistical Theory* (New York: Macmillan, 1968).
9. U.S. Nuclear Regulatory Commission, *Reactor Safety Study—Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants* (NUREG-75/014), Report No. WASH-1400 (Washington D.C.: Government Printing Office, 1975), 157 ff.
10. A. V. Kneese, S. Ben-David, and W. D. Schulze, "The Ethical Foundations of Cost-Benefit Analysis," in *Energy and the Future*, ed. D. MacLean and P. G. Brown (Totowa, N.J.: Rowman and Littlefield, 1982), 59–74. See also "A Study of the Ethical Foundations of Cost-Benefit Analysis Techniques," unpublished report, National Science Foundation, Program in Ethics and Values in Science and Technology, August 1979.
11. See the previous note. See also Kristin Shrader-Frechette, *Science Policy, Ethics, and Economic Methodology* (Boston: Kluwer, 1985), chs. 8 and 9; and P. Dasgupta, S. Marglin, A. Sen, and United Nations Industrial Development Organization (UNIDO), *Guidelines for Project Evaluation* (New York: UNIDO, 1972).

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Roger Taylor

THE ENVIRONMENTAL IMPLICATIONS OF LIBERALISM

Even if contemporary liberal political thought fails to provide an adequate basis for environmental protection, investigating its environmental implications may be a worthy enterprise, if only to foster discussion among liberal thinkers about the obligation to protect the environment. Examination of four contemporary liberal views of distributive justice—those of Rawls, Arneson, Sen, and the libertarians—shows that in these theories, environmental protection turns either on obligations to future generations or on the rights of individuals. The extent of environmental protection the four views implicitly require may be quite extensive, and is probably far beyond what proponents of each view might have imagined.

Environmental political philosophy has been justifiably critical of the failure of liberalism to give a satisfactory account of our obligations to protect and conserve the natural environment. Much of this criticism blames the anthropocentric foundations of liberalism and proposes replacing them with ecocentric foundations. Unfortunately, because of this disagreement about foundations, the environmentalist critique of liberalism has fallen to some extent on deaf ears.[1] In order to promote discussion of the theoretical basis for environmental protection among a wider audience, then, it may be useful to approach conventional political thought on its own terms. The objective of this

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approach would be to demonstrate the extent to which liberal theories are themselves committed to protecting the environment. The resulting picture of environmental obligations, while perhaps unsatisfactory to ecocentrists, may nevertheless be surprisingly extensive and could help awaken liberal theorists to the importance a strong environmental position has to their vision of society.

In this spirit I interrogate four anthropocentric theories of distributive justice in pursuit of their implied commitments to protecting the environment: John Rawls's resourcist approach to justice, Richard Arneson's welfarist view, Amartya Sen's "midfare" view, and the libertarian philosophy of (among others) Robert Nozick and John Hospers. Since I am concerned only to show the degree to which each theory of justice contains commitments to protecting the natural environment, no purpose would be served by evaluating the overall merits of the different positions; instead, each view is approached sympathetically. Any resulting environmentalist reconfigurations of the four views will rest on immanent rather than transcendent critiques.

Distributive justice is a logical focal point for this inquiry. Judgments about what is due to individuals in the way of material resources assume that those resources are available. (Why assert claims to things that are not available?) Protecting, husbanding, and utilizing resources—widely construed to include any material substance or environmental condition instrumental to human welfare—in order to meet a standard of distributive justice requires the consideration of ecological limits.

Anthropocentric conceptions of justice are, by definition, motivated to protect the environment purely as an instrumental means to the end of achieving justice for human beings. Clearly, one way such theories might oblige us to secure long-run ecological sustainability would be through substantive and sufficiently strong obligations to future generations. My discussion of each view is therefore concerned to determine if there are such obligations to future generations, as well as to ask what kind of environmental protection would be called for in the service of this commitment, and how social institutions would be shaped by the combined effects of environmental constraints and generational obligations (if they exist). The discussion of environmental protection has a global rather than local orientation; without preserving the global environment, one cannot preserve local environmental conditions indefinitely. The treatment of Rawls is more detailed than that of the others (primarily because of the complexity of his theory),

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and will allow me to introduce certain points common to my treatment of Arneson and Sen.

John Rawls's Resourcist View

Rawls sees his resource-based approach to distributive justice as an alternative to utilitarian approaches, which for various reasons he considers unsatisfactory. Rawls proposes that distributive justice be based on certain tangible and intangible resources he calls "primary goods." These resources are valued because they supply the means to attain individually chosen ends.

In *A Theory of Justice*, Rawls is concerned with the just distribution of four primary goods: 1) rights and liberties; 2) opportunities and powers; 3) income and wealth; and 4) the social bases of self-respect.[2] The distribution of each good is governed by one or both of Rawls's two principles of justice.[3]

The first principle, that of "the most extensive basic liberty" equally obtainable for all, guides the distribution of rights and liberties.[4] The second principle, which has two parts, guides the distribution of both opportunities and powers and income and wealth. The first part of the second principle (principle 2a) holds that "positions and offices [should be] open to all,"[5] and applies to the distribution of opportunities and powers. The second part of the second principle (2b), i.e., "the difference principle," governs the distribution of income and wealth, and states that inequalities in income and wealth should be tolerated only when they improve the prospects of the materially least advantaged. Finally, the social structures of society created by both principles tend to provide the strongest possible social bases of self-respect.[6]

The distinctive feature of Rawls's theory is the way he deduces and justifies these principles. Starting from an understanding of justice as fairness or impartiality, Rawls constructs what he calls the original position, in which imaginary participants charged with creating principles of justice for their society are stripped of particularistic knowledge of themselves and their place in that society. Though motivated by self-interest, they are unable to discern what would advantage them personally. Faced with the possibility of being among the least advantaged members of society, the parties arrive at principles of justice which conform to the Kantian imperative, "act only on that maxim through which you can at the same time will that it should become a universal law."[7] The conditions of the original position are

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appropriate because they fit Rawls's judgment that "no one should be advantaged or disadvantaged by natural fortune or social circumstances in the choice of principles."[8] Because these sorts of differences are morally arbitrary, they should not be allowed to translate into an unequal distribution of goods among individuals. Rawls argues that his principles of justice are a logical solution to the conditions of the original position.

Of the four views under discussion, Rawls's is the most explicitly concerned with the issue of justice between generations. Rawls sees no more of a basis for favoring the members of one generation over those of another than for favoring one individual over another within one generation. This is evident from one of the conditions of the original position, a condition designed to extend the principles of justice to all future generations of the society. Rawls states that those "in the original position have no information as to which generation they belong."[9] This is a necessary condition for justice conceived of as impartiality because

> questions of social justice arise between generations as well as within them, for example, the question of . . . the conservation of resources and the environment of nature. . . . *They must choose principles the consequences of which they are prepared to live with whatever generation they turn out to belong to.*[10]

The time period into which one is born is one of those chance outcomes of nature which Rawls believes are arbitrary from a moral standpoint. Including generational uncertainty as part of the original position is intended to secure justice equally for all generations of society.[11]

Another of Rawls's motivational assumptions results in a second guarantee of intergenerational equity. The original contractors are "deputies for a kind of everlasting moral agent or institution," so that "their goodwill stretches over at least two generations."[12] Rawls conceives them as members of families, and therefore expects that they would have an interest in the well-being of the next generation. So the primary good of rights and liberties will be secured for the next generation both because the parties wish to secure for their descendants the same liberties that they enjoy, and because the liberties of future generations are at any rate secured by the principle of equal liberty for all members of society.

Rawls also makes it plain that the difference principle is intended to maximize "the long-term prospects of the least favored extending over future generations."[13] In other words, improvements in income and

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wealth at any given time are justified only if they improve not just the prospects of the least advantaged living members of society, but also the prospects of those in the same position in future generations. So both the first principle and the difference principle (2b) explicitly apply equally to future generations. Therefore, intergenerational comparisons (forward in time only) must be made in assessing whether the principles of justice are being upheld. To these we can add an intergenerational application of principle 2a (equality of opportunity for offices and positions), justified by the overall commitment not to discriminate among members of society based on their place in time.

Knowing that Rawls's principles are to be applied across generations, we can begin to determine the extent of the commitment to the natural environment implied by his whole schema. To do this, it seems best to return to the original position and the parties who are responsible for setting up both the principles of justice and the basic social institutions of society.

As we have seen, the original position leads to the protection of the least advantaged members of society because the parties do not know their position in society. In characterizing the position of the least advantaged, environmental conditions would have to be factored in. Properly applying the difference principle would require incorporating changes in environmental quality into assessments of whether the least advantaged would be made better off by increases in wealth or income for other members of society. If gains in wealth are offset by environmental deterioration to such a degree that people are less able to pursue their ends, then the instrumental purpose of treating wealth as a primary good would be defeated.

In addition, holding wealth and income constant, improvements in environmental quality would also be subject to the constraints of the difference principle; that is, such improvements for any part of society would have to improve the prospects of the least advantaged. Though the principle originally applies only to income and wealth, we should bear in mind that for Rawls these goods are instrumental to obtaining a certain material quality of life and to pursuing individual life plans and goals; improvements in environmental quality in some instances have the same effect as improvements in income and wealth.

If changes in environmental quality were not subject to the difference principle, the case could arise where the least advantaged are exposed to greater environmental risks or diminished environmental quality. To maintain the material quality of life they previously enjoyed, the least advantaged would have to spend monetary

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resources to counter the effects of their worsening environment (for example, by moving to a less polluted, possibly more expensive, neighborhood). When losses in environmental quality more than offset material gains for the least advantaged, it would amount to a reduction in income or wealth, and would in effect violate the difference principle. And since the difference principle is to be applied so as to favor the least advantaged among all future generations, there can be no disadvantageous tradeoffs of wealth for environmental quality between the present generation and the least advantaged of future generations. Ascertaining when such tradeoffs would occur might be difficult if not impossible, but that is a problem of implementation and does not alter the principle.

Aside from the requirements of the difference principle, and perhaps more fundamental to protecting the environment, a certain base level of ecological quality must be assured for all the members of society throughout time. Rawls argues that one of the institutions needed to meet the principles of justice is a social minimum, in the form of either "family allowances and special payments for sickness and employment, or . . . a graded income supplement," available to all individuals.[14] But a social minimum would seem as well to require maintaining a certain base level of environmental quality. For one thing, the very idea of a minimum material standard of living should include a minimum standard of human health. (This, presumably, is why Rawls includes payments for sickness as part of his idea of the social minimum.) Because each member of every generation is entitled to the social minimum, social institutions must be arranged to sustain the level of environmental quality required to provide the social minimum into the indefinite future. Satisfying the principles of justice may require further protection of the environment, but the institution of the social minimum represents a base level which must be maintained, and which would be more quantifiable than levels based on the more intangible goods secured by the principles themselves.

There are, however, ecological considerations which may dictate a still higher level of environmental quality than that required to meet the social minimum. The earth's natural systems have limits to the amount of damage they can take and still reproduce themselves over the long run. And though we may not know precisely what those limits are, it is possible that they are much more strict than the environmental quality needed simply to maintain the social minimum for society. In other words, limiting environmental protection to that needed to satisfy the social minimum might produce damage to natu-

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ral systems whose impact on humans might not be immediately manifest, but which would in the long run undermine the social minimum. Continual net deforestation over the course of many generations would be one example.[15] Of course, in the event that the social minimum required a higher level of environmental quality than that needed for the long-run sustainability of natural systems, the problem would not arise.

Since the long-run sustainability of natural systems is a concern, however, it leads to questions about the size of the human population that can be supported over the long run—in other words, the global carrying capacity. Carrying capacity is not a static quantity; its upper bound is a function of the state of technology, the amounts and kinds of renewable and nonrenewable resources available, and the existing conditions of the environment; within Rawls's framework, carrying capacity is also a function of the level of the social minimum. Meeting the social minimum would require limiting population size to a level safely below the carrying capacity of the environment, leaving a buffer for human error and the limits of our knowledge of natural systems. Population size would be further constrained by those whose material standard of living exceeds the social minimum, since this translates into increases in environmental impact, other carrying-capacity variables held constant. As the population approaches this ceiling, reproduction would need to be constrained through social institutions to maintain a stable population.

It has been pointed out that Rawls intended his theory to be applicable only to one society, not to the world community. Thus it might justify an unequal distribution of benefits between the Rawlsian society and other societies if the former had sufficient military or economic power, since the principles apply only to the members of the Rawlsian society. This is a valid criticism, but it must be remembered that environmental externalities often do not respect political boundaries. For all the human injustice the Rawlsian state might export to other countries, it would still have to be structured to protect the environment in conformity with assuring the social minimum for its future generations. Thus, other states would reap the benefits of the public good that the Rawlsian society would be providing by protecting natural systems. On the other hand, other countries might capture the surplus resources which had thus been conserved, or they might degrade the environment disproportionately, vitiating the efforts of the Rawlsians to preserve the environmental conditions for future generations that the principles of justice dictate. A more successful

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resourcist approach, and arguably one truer to Rawls's egalitarian premises, might still be built on Rawls's principles of justice, but applied universally rather than to just one society.[16]

Richard Arneson's Welfarist View

Arneson declares that "for purposes of determining what should count as fair shares from the standpoint of distributive justice, the appropriate measure of a person's resources is some function of the importance those resources have for that very person as weighted by her conception of her own welfare."[17] It is not equality of resources that accomplishes just distribution, but equality of welfare achievement, subjectively defined, by the use of whatever resources are necessary to realize this end. Arneson's version of welfarism specifically favors the equal opportunity to satisfy preferences.[18] He focuses on the comparative merit of his approach to distributive justice, but does not elaborate a full theory of justice encompassing a vision of social organization. We can, however, draw some logical conclusions about the basis of concern for future generations and protecting the environment from his arguments for equalizing welfare opportunity.

Arneson wants to equalize welfare opportunity because, like Rawls, he considers it unjust for morally arbitrary differences among individuals to confer advantage upon one over another.[19] As was the case with Rawls, generational membership suggests itself as a fairly clear instance of a morally arbitrary difference. Thus, equal opportunity for preference satisfaction ought to be upheld both for those living and those yet to be born. Social institutions would strive to equalize the preference satisfaction of every person, regardless of their place in time.

In constructing a society guided by equality of welfare opportunity, a first step would be to establish a guaranteed social minimum of preference satisfaction below which no one should be allowed to fall. This recognizes that equality alone is not a sufficient norm; it must be supplemented with a minimum level of preference satisfaction in order to avoid the undesirable theoretical outcome of a world in which equal preference satisfaction is fulfilled, but at a level approaching zero preferences for every individual.

Much as was the case with the consequences of Rawls's social minimum, achieving equal preference satisfaction at some specified minimum for all generations requires protecting natural systems in a

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global, comprehensive manner so that they can continue to produce the living conditions conducive to human existence over the long run. If the social minimum of preference satisfaction does not achieve this as an incidental outcome, additional measures must be taken to protect the environment. For example, the aggregate effect of satisfying certain preferences (such as a preference for products made from rare tropical woods) may threaten long-run environmental quality; such preferences would have to be curtailed or disallowed. Being committed to some form of welfare *equality*, as Arneson clearly is, means placing limits on the kinds and amounts of preferences that may be satisfied.[20]

Long-run global carrying capacity (the sustainable human population) would again have an upper limit, and would be set by the kinds of preferences allowed and the sum of their effects on natural systems, as well as the state of technology, the availability of natural resources, and existing environmental conditions. Social institutions, in striving to achieve equality of preference satisfaction for all generations, would have to confront the issue of population control. And since preference satisfaction both implies the need for a certain level of environmental quality and undermines environmental quality (depending on the nature of the preference), the effects on the environment of realizing different preferences would need to be studied in order to rationalize the process of preference satisfaction within the constraints of maintaining environmental quality for present and future generations.

Amartya Sen's "Midfare" View

As the term "midfare" suggests, Sen treads a path between the resourcist and welfarist approaches. Sen notes that Rawls values resources because they are presumed to be instrumental to whatever ends individuals might choose to pursue. The primary difficulty with this approach is, according to Sen, that it "seems to take little note of the diversity of human beings."[21] Equality of resources will not translate into the equal satisfaction of the same set of needs or objectives for a group of individuals because individuals differ from one another in significant ways. Satisfying the dietary needs of a two-hundred pound athlete will require vastly more resources than satisfying those of a one-hundred pound bookworm. The resourcist approach results in differing levels of fulfillment based on morally arbitrary differences

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between individuals, which is precisely the kind of problem it was supposed to have solved.[22]

On the other hand, welfarist views are unsatisfactory because of their reliance on totally subjective measures of well-being. No outcome is ever ruled out on moral grounds; that is, no prior and general conception of what is right or good for people can constrain the pursuit of preferences. All manner of basic human rights can be violated in the service of improving people's welfare when the latter is equated with preferences.

Sen's answer is to define equality in terms of basic capabilities.[23] What is missing in the other accounts, he argues, is an objective account of basic needs which we all have, and which should be fulfilled equally for all. These are the kinds of things which usually head up a list of basic human needs: "the ability to meet one's nutritional requirements, the wherewithal to be clothed and sheltered, the power to participate in the social life of the community," and so on.[24] Comparing the fulfillment of basic capabilities between individuals is a meaningful way of determining whether equality obtains, and providing objectively defined basic capabilities for all avoids morally abhorrent outcomes.

Sen distinguishes two kinds of capabilities, that of well-being and that of agency.[25] "The primary feature of a person's well-being," Sen explains, "is the functioning vector that he or she achieves."[26] Functioning vectors reflect the degree to which objectively defined sets of activities (e.g., "eating, reading, or seeing") and states of being (e.g., good health, being socially accepted) are achieved by each individual.[27] These activities and states of being form a basic set of capabilities which every member of society needs (whether they think so or not).

Agency capabilities, on the other hand, refer "to what the person is free to do and achieve in pursuit of whatever goals or values he or she regards as important."[28] Agency is the ability to achieve ends that are willed by an individual. While these individually defined preferences may often contribute to well-being, they may also conflict with it. Aspiring to be one of the few mountain climbers to reach the summit of Mt. Everest without the aid of supplied oxygen would represent a goal that is in clear conflict with aspects of well-being, but more commonplace goals, such as fasting, may also contribute to a diminished state of well-being.[29] Agency capabilities allow people to pursue subjectively willed ends except when they interfere with another's well-being capabilities (since equality of well-being is part of the prin-

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ciple of equality of basic capabilities), thus incorporating the positive aspects of utilitarianism without its morally relativist trappings.

The question of whether future generations deserve equal consideration under Sen's understanding of equality of capabilities cannot be answered without a more fully enunciated theory of social organization. Like Arneson, Sen is primarily concerned with defining a satisfactory measure of equality rather than putting together a complete picture of a morally attractive society. Thus, he does not address the problem of prioritizing conflicting capabilities either among present generations or between present and future generations, or even the question of whether future generations can be said to have claims in the first place. However, as with Arneson, we can make some tentative judgments based on certain aspects of Sen's theory.

First, Sen argues that morally arbitrary differences among individuals should not disadvantage them relative to others. This argument is, as we saw, the basis of his immanent critique of Rawls: equal distribution of primary goods does not lead to equality if we seek to equalize what people can attain with those goods (e.g., well-being and agency). Not only are social conditions arbitrary (as Rawls recognizes), but differences in natural endowments and attributes such as intelligence, gender, and a host of physiological characteristics are also bestowed upon individuals through mechanisms wholly beyond their control. Sen identifies the sources of these differences as the chance outcomes of social and natural circumstances.[30] Inasmuch as generational membership is one such arbitrary social circumstance, the principle of equality of capabilities must not discriminate between members of different generations.

As in Arneson's case, a first step en route to intergenerational equality of basic capabilities would be to establish a guaranteed social minimum of those capabilities to ensure that all members of society achieve some acceptable level of functioning; equality of capabilities realized below some minimum has no appeal. (The primary difference among Sen, Rawls, and Arneson on this score is the measure they use to set the minimum.)

We will arrive, thereafter, at similar conclusions about protecting the environment and its ramifications for social institutions as we did in the previous discussions of a social minimum. Social institutions should be arranged to provide the minimum for future generations as well as those living, and should therefore seek to protect the environment to assure the social minimum over the long run. Population control at the margin of global carrying capacity would again be a

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paramount concern. If social arrangements allow standards of living beyond the social minimum of basic capabilities, population must be further reduced to compensate for the additional impact on the environment. Finally, a Senian society should not be indifferent to the manner in which capabilities are fulfilled; different means used to feed, clothe, and shelter have different effects on the environment. Solutions to such issues depend on a more robust account of a just society, but they must be confronted if the obligation to provide a minimum of basic capabilities for all is taken seriously.

Libertarian Philosophy

The fundamental premise of libertarianism is that all individuals possess inviolable rights of sovereignty over their persons and justly acquired property. The source of these rights is, according to Nozick, the autonomous or self-directing character of human beings, especially their ability "to formulate long-term plans" for their lives, making daily choices based on mental pictures of their lives conceived as whole and connected enterprises. The ability to conceive and realize this kind of overall purpose to one's life gives it meaning and significance.[31]

Because we are all equally possessed of this capacity, coercing some (and thereby thwarting their realization of life plans) for the benefit of others is not justified, even if more are made better off by such collective actions. As Nozick puts it,

> there is no social entity with a good that undergoes some sacrifice for its own good. There are only individual people, different individual people, with their own individual lives. Using one of these people for the benefit of others, uses him and benefits others. Nothing more.[32]

Any redistribution of justly acquired property violates the rights of its possessors, who are using it to achieve their life-plans. Each person has a right against such interference from others, even if those prohibitions result in a lower overall benefit to the aggregation of individuals called society.[33] Individual liberty, understood as freedom from coercion, is the paramount good.

But Nozick seems to pull back from the environmental implications of this position during a digression about pollution and its prohibition, and for this reason interpreting the kind of environmental protection that could be expected under Nozick's theory becomes problematic.

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This digression, in good libertarian fashion, defines pollution as "the dumping of negative effects upon other people's property such as their houses, clothing, and lungs."[34] Nozick continues:

> Since it would exclude too much to forbid *all* polluting activities, how might a society (socialist or capitalist) decide which polluting activities to forbid and which to permit? Presumably, it should permit those polluting activities whose benefits are greater than their costs, *including within their costs their polluting effects*. The most feasible theoretical test of this net benefit is whether the activity *could* pay its way, whether those who benefit from it would be willing to pay enough to cover the costs of compensating those ill affected by it. [emphasis in original][35]

Nozick wants to bracket pollution as a uniquely allowable rights violation, in which those whose rights are violated can be compelled to accept the infringement on their sovereignty (with compensation), rather than letting them retain their right to prohibit it, since leaving open the possibility of prohibiting pollution "would exclude too much." Here Nozick seems to endorse what he calls a patterned principle, whereby a particular outcome of the enforcement of individual rights (forbidding all pollution) is ruled out on consequentialist grounds—precisely the kind of move his theory of distributive justice emphatically rejects as morally inadmissible.[36] Moreover, it is difficult to imagine how one may be compensated adequately for the pain and suffering from pollution-induced cancer, or, for that matter, for having to forgo the experience of seeing a salmon spawning run or a beautiful blue sky. Indeed, it is just this sort of choice that libertarianism is supposed to protect. To force people to accept money in lieu of life, health, or beauty seems to violate both the spirit and the letter of libertarianism. Other libertarians, however, do have the courage of their convictions.

Thus, much like Nozick, John Hospers regards as fundamental "the liberty of each person to live according to his own choices, provided that he does not attempt to coerce others and thus prevent them from living according to their choices."[37] But unlike Nozick, Hospers accepts that since pollution is one of many possible mechanisms through which individual rights can, and often are, violated, it ought to be actionable by those whose rights are violated. People should be able to "sue the manufacturers of automobiles who do not install antismog devices;" or if "someone with a factory upstream on a river pollutes the river, anyone living downstream . . . should be able to sue the owner of the factory."[38]

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Hospers emphasizes that not only is actual coercion or other physical interference a violation of individual rights, but so is the threat of interference.[39] Thus, activities that threaten to violate rights can be enjoined; included among these would presumably be environmentally destructive actions (such as those that cause ozone depletion, acid rain, or deforestation) which will lead to rights violations in the future. Activities that threaten the rights of unborn individuals (like the dumping of hazardous waste) could perhaps be enjoined by advocates for the unborn, although Hospers does not consider this possibility.

Global environmental problems (real or potential) like ozone depletion, global warming, deforestation, and even species extinctions (insofar as loss of biodiversity can degrade environmental quality) ultimately violate all manner of individual and property rights. Ozone depletion, for example, is projected to cause three to fifteen million additional cases of skin cancer, and between 59,000 and 282,000 deaths from skin cancer, among Americans born before 2075; for the same time period, the EPA estimates between 500,000 and 2.8 million additional cases of cataracts.[40] These predictions need not even be remotely accurate; there need only be a causal link between ozone depletion, increased UV exposure, and health risks to establish that individual self-ownership rights have a high probability of being violated. These issues were not salient when Hospers wrote *Libertarianism* in 1971; the examples he gives, however, affirm that such phenomena as automobile smog are rights violations because they cause involuntary harm to one's body or property.

In Hospers's libertarian world, environmentalists could, by purchasing strategically located real properties and living in locations where pollution violated their personal sovereignty, force polluters to use and develop the best pollution control technology or even prohibit the polluting activities. Environmentalists could purchase the land and waterways at the mouths of rivers, enabling them to stop water pollution, dam-building, and the transportation of timber or other natural resources from upstream lands. They could buy land in the path of access routes to forests or strip mines, or buy pieces of land in checkerboard fashion, making extraction of these resources impossible. While a perfect libertarian world does not provide any ex ante guarantees that the environment will be preserved, it does seem to require ending environmental degradation by protecting individual rights.

Libertarianism leads to protection of the environment not through any scheme of distributive justice, but as a matter of primary individual rights. Or perhaps it would be more accurate to say that libertari-

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anism distributes equally to all the right to prohibit actions that interfere with their persons and their justly acquired property. If anything, the protection of each individual's person and property would appear to justify limitless environmental protection, since it is hard to say what human activities do not transmit potentially undesirable, or at least undesired, effects to non-consenting individuals' persons or property through the medium of the environment.[41] Although libertarianism places no intrinsic value on the environment, its absolute opposition to coercion would appear to condemn virtually any form of environmental degradation, since such degradation almost always affects non-consenting individuals involuntarily. This is, evidently, why Nozick abandons his principles so quickly when considering pollution.

* * *

Liberalism may not be the best theoretical approach to protecting the environment; it may indeed prove entirely inadequate to the task. However, since liberalism requires that all members of society be treated equally in some respect—whether in the distribution of resources, welfare, capability for well-being and agency, or freedom—it gives birth to obligations to protect the environment in the interests of those who are to be treated equally. If other liberal principles modify this position, liberal theorists are invited to elaborate on them; we may then begin a dialogue about protecting the environment and creating a sustainable society.

NOTES

1. Robyn Eckersley, for example, has argued that ecocentrism is the most promising approach to ecopolitical theory, and is specifically superior to anthropocentric frameworks. While she has had a good measure of success in arguing this point, we should not expect her views to convert many anthropocentrists to an ecocentric position. Like the arguments for belief in God which Pascal presented in his famous wager, Eckersley's thesis may not convince many anthropocentrists to abandon their views in favor of ecocentrism, simply because reasoning rarely changes belief systems. (I am not suggesting that the success of Eckersley's project should be measured by its ability to convert the world of "non-believers.") Robyn Eckersley, *Environmentalism and Political Theory* (Albany: SUNY Press, 1992).
2. John Rawls, *A Theory of Justice* (Cambridge, Mass.: The Belknap Press of Harvard University Press, 1971), 62, 92.

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3. Ibid., 60–65. The principles of justice are "to govern the assignment of rights and duties and to regulate the distribution of social and economic advantages." Ibid., 61.
4. Ibid., 60.
5. Ibid.
6. Ibid., 178–9.
7. Immanuel Kant, *The Foundations of the Metaphysics of Morals*, Part II, Sec. 52.
8. Rawls, 18.
9. Ibid., 137.
10. Ibid., emph. added.
11. Whether Rawls's theory as it is written secures equal claims to distributive justice for future generations is another issue. Some have made cogent arguments that their claims have not been secured. See Brian Barry, "Circumstances of Justice and Future Generations," in R. I. Sikora and Brian Barry, eds., *Obligations to Future Generations* (Philadelphia: Temple University Press, 1978), 204–48; Peter Danielson, "Theories, Intuitions and the Problem of World-Wide Distributive Justice," in "Review Symposium on Rawls," *Philosophy of the Social Sciences* 3 (1973): 336; D. Clayton Hubin, "Justice and Future Generations," *Philosophy and Public Affairs* 6 (1976): 70–83; Peter Wenz, "Ethics, Energy Policy, and Future Generations," *Environmental Ethics* 5 (Fall 1983): 195–209. The import of these criticisms for my argument here is simply that Rawls needs to amend his theory to achieve the outcome dictated by his principles, which require that future generations not be disadvantaged by their position in time.
12. Rawls, 128. Also see 208.
13. Ibid., 285.
14. Ibid., 275.
15. Net deforestation might undermine the social minimum not only by depleting a needed renewable resource faster than it regenerates, but also by upsetting global climate patterns or weakening ecosystems through species extinctions. The example highlights the fact that natural systems are threatened not only by pollution, but through their depletion as a natural resource. Because most of the environmental conditions which are conducive to human life (presence of oxygen, protection from UV light, hospitable temperatures, and so on) are produced by the combined actions of the earth's natural systems, Rawlsian justice would require setting aside some quantity of intact ecosystems worldwide so that they would continue their contribution to the maintenance of these conditions.
16. For an example of an internationally based theory along Rawlsian lines, see Charles R. Beitz, *Political Theory and International Relations* (Princeton: Princeton University Press, 1979).
17. Richard J. Arneson, "Liberalism, Distributive Subjectivism, and Equal Opportunity for Welfare," *Philosophy and Public Affairs* 18, no. 2 (Spring

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1990): 159. Arneson elaborates a conception of welfare as "hypothetical ideally considered preferences—those the individual would have if he were to engage in ideally extended deliberation about his preferences with full pertinent information, in a calm mood, while thinking clearly and making no reasoning errors." Ibid., 163.

18. In addition to the previously cited article, see Richard Arneson, "Equality and Equal Opportunity for Welfare," *Philosophical Studies* 56 (1989): 77–93.
19. That justice or fairness is equated with some kind of equality among individuals who differ from one another only in morally arbitrary ways is, however, only elliptically suggested by Arneson. See ibid., 79, 85.
20. This is true regardless of whether environmental constraints apply. Equality of preference satisfaction certainly would not mean including crimes and violent aggression against others as legitimate preferences.
21. Amartya Sen, "Equality of What?" *The Tanner Lectures on Human Values*, vol. I, ed. Sterling McMurrin (Salt Lake City: University of Utah Press, 1980), 215. The critique of Rawls is also taken up in Sen's latest book, *Inequality Reexamined* (Cambridge, Mass: Harvard University Press, 1992). See ch. 5, sec. 3, and ch. 9, sec. 9.
22. Sen, "Equality of What?" 215–16.
23. By equality of capabilities, Sen means equalizing a given capability among all individuals; he does not intend to equalize each capability relative to every other. Capabilities often conflict, and some kind of prioritization scheme must govern the outcome of these conflicts (though Sen does not provide one). See Sen, *Inequality Reexamined*, 46.
24. Sen, "Equality of What?" 218.
25. Amartya Sen, "Well-being, Agency, and Freedom," *The Journal of Philosophy* 82, no. 4 (April 1985): 169–221. For his most recent formulation of well-being and agency, see Sen, *Inequality Reexamined*, ch. 4.
26. Sen, "Well-being, Agency, and Freedom," 198.
27. Ibid., 197–8.
28. Ibid., 203.
29. Mountain climbing is my example, fasting is Sen's. See Sen, *Inequality Reexamined*, 52.
30. Ibid., 148.
31. Robert Nozick, *Anarchy, State, and Utopia* (New York: Basic Books, 1974), 48–51.
32. Ibid., 33.
33. These prohibitions are expressed in the form of side constraints. Ibid., 30–33.
34. Ibid., 79.
35. Ibid.
36. For Nozick's discussion and rejection of patterned principles, see ibid., 155–64.

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37. John Hospers, *Libertarianism: A Political Philosophy for Tomorrow* (Los Angeles: Nash, 1971), 5.
38. Ibid., 70.
39. Ibid., 52.
40. Lester Brown et al., *State of the World 1989* (New York: Norton, 1989), 82.
41. The logic of this argument is nicely captured by libertarian David Friedman in *The Machinery of Freedom* (La Salle, Ill.: Open Court, 1989), 167–70.

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Laurent Dobuzinskis

IS PROGRESSIVE ENVIRONMENTALISM AN OXYMORON?

Environmentalism has been a part of the ideological landscape of liberal societies for nearly three decades. Classical liberals have not yet succeeded, however, in articulating a coherent response that would be relevant to politically active environmentalists, as well as to liberals receptive to postmodern ideas. Robert C. Paehlke argues that, conservative liberals being in fact hostile to environmental thinking, moderate progressivism and environmentalism should enter into a close alliance. This paper challenges both assertions. Admittedly, not all currents within contemporary conservative liberalism could play a part in the development of a neoliberal environmentalist movement. One current, however, the skeptical tradition, whose origin can be traced back to the Scottish Englightenment, is remarkably well suited to this task. Progressivism, on the other hand, could end up smothering the environmental movement under the weight of its own certainties.

Just when we thought that the clash of ideologies had finally ended with the triumph of individualist liberal principles, we find ourselves confronted with an emerging ideology. Environmentalism is in the process of asserting its autonomy vis-à-vis liberalism and socialism.

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According to Robert Paehlke, the author of *Environmentalism and the Future of Progressive Politics* (New Haven: Yale University Press, 1989), the environmental movement is much more than one pressure group among others. It is the carrier of a new vision of the good life, grounded in science—more so, indeed, than any other ideology so far, *pace* Marx (273)—but not reducible to science. The virtuous life, from this perspective, is guided by a reverence for the natural world and a belief that humankind must live in harmony with it. Paehlke is not very clear on this, however. He endeavors to establish environmentalism as an ideology in its own right, referring to his own work as making a contribution to that cause (4), yet he remains surprisingly vague as to its defining characteristics. Perhaps it should be pointed out in his defense that environmentalism—the least reductionist of all ideologies—cannot easily be encapsulated in a single formula. Moreover, there exists an already substantial literature on environmental ethics and "ecosophy" to fill some of the blanks left by Paehlke.

There is, however, one aspect of this emerging ideology about which Paehlke is far from silent. He argues that environmentalism is neither "left" nor "right" on such conventional questions as economic redistribution. This is partly because, as I explain further on, he discerns elements of both the "left" and the "right" in environmentalism. But it is above all because, he claims, environmentalism is concerned with an entirely different range of problems and issues than the usual societal concerns, including distributive issues.

While affirming that environmentalism is well on the way to becoming a complete and coherent ideology, Paehlke suggests that it stands a better chance of being effective in the present context if it enters into a close alliance with the forces of moderate progressive reformism (i.e., contemporary American "liberalism" or, perhaps more appropriately, social democracy). This strategy is justified by what Paehlke regards as the profoundly anti-environmentalist positions adopted by "neoconservative" governments in the Anglo-American world.[1] (This was written before the election of [former] President Bush, and before [former] Prime Minister Thatcher expressed her commitment to the protection of the ozone layer and other environmentalist goals.)

This position, however, involves a potential contradiction. How can Paehlke pretend that environmentalism is neither "right" nor "left" while, at the same time, insisting that it is a progressive movement after all? Not to mention that environmentalism, especially at its more radical core, rests on a set of values that are not obviously compatible

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with those that inform humanistic, progressive, left-of-center liberalism or social democracy. Paehlke is, in fact, aware of these tensions, but the answer he provides is ambiguous and perplexing. One reading of his work suggests that, in a somewhat Machiavellian fashion, environmentalism could use the progressive movement as a launching pad that would propel it into its own orbit, thus becoming the first truly new ideology to have emerged in the postwar years. Another possible reading places environmentalism in a subservient position vis-à-vis the progressive movement; the role of environmentalism would be to breathe new life into a movement that has so far failed in its attempts to stem the rising tide of conservatism. I have considerable sympathy with the first reading, all the more so because I think that all existing ideologies have run out of steam in their efforts to make sense of the bedeviling complexities that define our postmodern condition. I too look toward environmentalism as a way out of this dilemma. But I would argue that a better launching pad would include a larger dose of the concepts and values we have inherited from skeptical classical liberal thinkers than the few concessions that Paehlke is prepared to make to these values. As for the second reading, it is potentially disappointing, especially in light of the fact that Paehlke pays almost no attention to the problem of "government failure"—a problem that could prove fatal to the progressive program and to environmentalism if it were to follow Paelke's prescription to the letter.

Paehlke's goal sounds reasonable insofar as most environmental protection groups appear to side with the left against the "capitalist establishment." I believe, however, that environmentalism is closer to conservatism than is generally acknowledged. What the specific points of convergence between environmentalism and conservatism are is a question that still remains largely untouched. Unfortunately, some of the possible combinations of these two modes of thought could turn out to be very unpalatable to classical liberals and moderate conservatives. The irrationalist connotations of the radical critique of technology proposed by "deep ecologists" could mesh with the antihumanist tendencies of a resurgent reactionary movement, such as exists in Europe. Is it irrelevant to point out that Heidegger, whose own critique of technology often serves as the model for such reflections, expressed sympathies for national socialism? Or is it coincidental that in France the fascistic and racist National Front sometimes uses concepts derived from sociobiology and also has succeeded in forging some tactical alliances with antinuclear protesters and animal rights activists? I do not wish to dwell on these admittedly rather impres-

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sionistic and speculative observations. My point is simply that if, as I hope and attempt to explain hereafter within the limiting constraints of a short paper, environmentalism and conservatism can be married in such a way as to produce a new ideology that will help us to face up to a wide range of new challenges better than Paehlke's progressive environmentalism, we have to proceed with care and remind ourselves that this enterprise entails the risk of legitimizing reactionary archetypes.[2]

One of the best ways of guarding against this risk is to build on the already solid foundation established by libertarian economists who have proposed ingenious solutions to current environmental dilemmas in terms of property rights and free-market pricing.[3] Economics, however, does not have all the answers and might even be part of the problem because of its positivistic tendencies. Therefore, I suggest that these market-oriented policy proposals must be placed in a broader epistemological context, namely, the skeptical and evolutionary interpretation of the tenets of liberalism, such as we find in the Scottish Enlightenment, in Hayek's works, and also in recent reflections on complexity and self-organization. In such a context, the very notion of property rights might advantageously be rethought and adapted to ever-changing circumstances.

This paper focuses first upon the central themes in Paehlke's book, and particularly on his prescription for articulating a progressive environmentalist program of political action. Then I sketch out the contours of an alternative strategy intended to produce a resonance, as it were, between concepts and values drawn from nonrationalistic and evolutionary social theory, on the one hand, and from environmentalism, on the other.

There is Still Hope

Doomsday scenarios are one of the preferred genres of environmentalist literature. Beginning with Malthus, and especially since the late 1960s, all sorts of predictions of an impending and catastrophic ecological crisis have been made. One of the latest, and not the least effective, expression of this kind of environmental gloom and doom is Christopher Manes's *Green Rage: Radical Environmentalism and the Unmaking of Civilization*.[4] But Paehlke refuses to play Cassandra's part when discussing the changing and complex relationships between humankind and the biosphere. Not that he agrees wholeheartedly with apologists of technology such as Peter Vajk or Petr Beckmann,[5] nor with "Cor-

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nucopians" like Julian Simon,[6] nor even with arguments of the "on balance, everything is all right" variety.[7] But in Paehlke's opinion, environmentalism need not convey an apocalyptic message. He recognizes that, for all the very real and serious problems we face, the sky has not fallen yet, contrary to what some predicted only a decade or so ago. (Similar predictions we hear today may suffer the same fate.) He ventures, however, that an "environmentalism without a millennial dimension . . . may turn out to be a much more important movement than was anticipated in the early years" (2). The reasons that he adduces for this prediction are often compelling but fraught with intriguing contradictions—contradictions that also characterize the environmental movement as a whole.

There are reasons to be deeply troubled by the many threats to the ecological health of this planet, not to mention our own health. Pollution of the natural environment is something that practically everybody has witnessed and experienced. It is, of course, not a new phenomenon; indeed, some may want to argue that many European and North American industrial cities are cleaner today than they were a hundred years ago (the cleaning up of the Thames is a case in point). All the same, it is difficult to escape the conclusion that matters have become worse on a global scale. This is what helped to transform the old conservation movement into the new environmental movement. While conservationists were preoccupied with the preservation of natural resources and had, on many occasions, advocated the protection of wilderness areas, they lacked an ecological consciousness—with the exception of a few visionaries like John Muir or Aldo Leopold. In the early days, environmentalists like Rachel Carson or Barry Commoner were preaching in the desert, as it were. But the monotonous repetition of events like the Love Canal disaster added momentum to a movement that in the space of two decades has become a powerful political force, even if its strength continues to vary in inversely with the business cycle.[8] The vigor of the movement is in itself a hopeful sign that ecological degradation does not have to become inexorably worse. But if the movement is to continue to grow, Paehlke argues that its advocates must avoid being trapped into a strictly negative discourse. It is in this light that he approaches the discussion of the population explosion and the energy crisis.

Resource depletion and overpopulation are not new themes but environmentalists have reformulated them in a more systematic manner while also adding an ecological dimension. Coming after two decades of sustained economic growth, which seemed to have contrib-

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uted the final counterproof to Malthusianism, the publication of *The Limits to Growth*[9] came as a shock. Based on a computer simulation that made it appear "scientific," this work forecast massive starvation and other calamities as a result of the leveling off of the rate of growth in food production and in the production of other essential commodities derived from natural resources.[10] While the work remained vague regarding the policy implications that should follow from this scenario, other authors, most notably Paul Ehrlich, Garett Hardin, William Ophuls, and Robert Heilbroner, reached the conclusion that, in the new age of scarcity, politics would have to sharply limit economic expansion. Paehlke reacts strongly against such authoritarian prescriptions. The demographic and ecological situation may well be as serious as these authors estimate it to be, but coercive measures have more of a chance of being counterproductive than helpful. Paehlke relies mostly on appeals to authority; to rebut Heilbroner and Co., he refers to Richard J. Barnett's *The Lean Years: Politics in the Age of Scarcity* (1980) as the definitive case against the temptation to espouse ill-conceived Hobbesian solutions rather than securing a greater degree of public understanding and participation. In a more recent article, he has elaborated upon this theme,[11] contending that there are three related reasons for advocating participatory solutions to environmental problems. First, democratic participation turns out to be a better discovery process than bureaucracy; that is, experts will always miss some of the facts that a public inquiry will reveal. Second, participation brings about a greater degree of mobilization of the political resources required to implement policy objectives. Finally—and here we return to the Machiavellian dimension of Paehlke's project—participation must be encouraged because it is likely to attract followers to the cause, and environmentalism in North America can succeed only on the condition that it becomes the preferred option of a large majority of citizens. (Although there is no reason to question the sincerity of his commitment to the democratic ideal, the *Realpolitik* undertone of Paehlke's last argument is evident, even if perhaps unintended.)

Similarly, Paehlke contends that if there is an energy crisis, it is due to the fact that industrialized societies are traveling on what Amory B. Lovins calls the "hard energy path."[12] The "soft energy path" can lead to a more promising future. A central feature of this alternative strategy is energy conservation. Not only is energy conservation an ecologically sound way of meeting energy needs, but it also opens up a wide range of opportunities for creating new employment, and it may

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be implemented "from the bottom up" rather than through coercive means. But despite his opposition to draconian political measures, Paehlke has in his sights the same target as the neo-Malthusians: endless economic growth.

Environmentalism vs. Economic Growth

Drawing on the work of E. J. Mishan, Kenneth Boulding, Herman Daly, and the research done by the Science Council of Canada on the concept of a "conserver society,"[13] Paehlke mounts a full-fledged attack on economic growth. The alternative, he claims, is not necessarily a completely stationary or even a declining economy: there would still be opportunities for some growth in a conserver society, although it would more often be qualitative rather than quantitative. But "economic growth becomes, for environmentalists, a means rather than an end" (142).

To bring about this momentous shift—assuming for a moment that Paehlke is right in his characterization of economic growth as the contemporary end in itself—he suggests that new values must prevail over existing ones. He identifies the "core values" of environmentalism as certain philosophical and moral attitudes, such as "an appreciation of all life forms," a "sense of humility" and an "extended time horizon"; socio-political orientations, such as "some preference for political and/or population decentralization," a "belief that human societies should be reestablished on a sustainable basis," and an "inclination to more democratic and participatory political processes"; and some practical norms, such as a "revulsion toward waste" and a "love of simplicity" (144–5). Paehlke stays clear of the controversy that pits "deep ecologists" against "social ecologists" on the question of whether environmentalism expresses a "biocentric" worldview, or is better understood in terms of a reformulation of the political economy of industrial societies. One may argue that this split is an aberration, and that the two camps could be reconciled if they were to embrace an "eco-centric" worldview that would transcend the limitations of both perspectives, as Brian Tokar has suggested.[14] Indeed, it is rather obvious that what both tendencies share is a rejection of instrumental rationality. But the fact is that the defining values of North American environmentalism are not quite as easily synthesized as Paehlke seems to assume. A synthesis of the values of environmentalists on a worldwide scale would have been even more challenging, but Paehlke has

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reasonably chosen not to attempt such a feat. (European environmentalists are more likely to be peace activists and tend to be more concerned with quality-of-life issues than with the preservation of wilderness—not surprising, considering the almost total absence of something like complete wilderness on the European continent.)[15]

Implicit in Paehlke's ringing endorsement of the concept of the conserver society is a deep suspicion of the market economy. According to its advocates, the conserver society is supposed to provide for our "real" needs, as distinct from the "artificial" needs induced by advertising. In other words, markets do not serve to adjust sovereign consumers' preferences to the supply of goods and services, but reflect the choices made by influential corporate executives in favor of certain goods over others.[16] This prejudice is even more apparent in his critique of the environmental record of the Reagan administration. Many, including myself, would agree that this record was uninspiring, especially during the first term. Secretary of the Interior James Watt will long remain cast as the legendary "bad guy" among environmentalists, and for some good reasons. But, to be fair, it should be granted that this hostility to environmentalist goals was not necessarily rooted in a failure to appreciate the environment; it was instead motivated by a desire to allow for its recreational and commercial use (which is not necessarily unsound ecologically) and, more important, by a preference for market-based solutions to environmental problems. Paehlke categorically asserts that "the market itself imposes a few limitations, as in the case of rising energy prices, but usually these are not as prompt or as thorough as environmental prudence suggests" (208). The effectiveness of property rights in protecting the environment may indeed be difficult to evaluate in the abstract since these rights are interpreted and qualified by a multiplicity of economic and political actors in a variety of contexts where other objectives often prevail. Society is not a laboratory where controlled experiments can be carried out. However, there are good reasons to believe that if property rights were to become part of a comprehensive environmentalist program, they would turn out to be more effective than government regulation.

Market-oriented approaches can be of at least two types: measures that monetize undesirable social effects, and measures that establish property rights (or their creation where none existed before). Pollution taxes are an example of the first type. Tradeable emission rights, such as those already administered by the U.S. Environmental Protection Agency, are an example of the second. The first reason that

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Paehlke's dismissal of market incentives is, to say the least, overly hasty is that as the latter example has shown, such incentives can be a flexible and effective way to reduce pollution. Tradeable emission permits ensure that the total amount of pollution from a given industry is reduced without imposing excessive compliance costs on the least efficient firms, since the latter can purchase emission rights from more efficient firms. The privatization of common-pool resources is another (and somewhat more radical) example of how property rights can be used to promote sound environmental practices. For instance, privately owned fishing streams in England have been remarkably well managed.[17] Similarly, the environmental record of the forestry industry in Sweden, where privately owned wood lots predominate, is much better than in Canada, where the provinces grant farm licenses to companies applying to exploit Crown-owned forests.

Second, the alternatives to market coordination have so far proven to be often less than totally satisfactory. On theoretical grounds first, it can be argued that bureaucratic agencies tend over time either to be "captured" by special interests or to become a sort of state within the state over which elected politicians are unable to exercise necessary controls. The environmental consequences of these "government failures" can be disastrous. The underpricing of water and premature development on an excessive scale of irrigation projects in the western United States is a good example of the first of these trends, i.e., capture by agricultural interests.[18] The extraordinary power and self-serving investment policies of publicly owned utilities in some Canadian provinces (e.g., Quebec and Ontario) is an example of the second type of failure—indeed, the environmentalist group Pollution Probe has been demanding the privatization of Ontario-Hydro for some time now. Paehlke might reply to this criticism that, in his view, and in the view of many environmentalists who favor a decentralized community-based model of economic development, the alternative to free markets is not necessarily bureaucratic management. However, even if such is the case, it remains true that, on pragmatic grounds, the development of new and less polluting technologies is not possible without the direct involvement of business.[19] Especially at a time when most governments are practically paralyzed by severe fiscal constraints, it would be very unrealistic to expect that public agencies could play a leading role in the development of more "sustainable" techniques of production. On the same pragmatic grounds, it must be conceded, however, that there *are* environmental villains and that the

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state has a legitimate policing role to play in sanctioning some very basic rules of environmental safety.

Progressive Environmentalism or Environmentalist Progressivism?

Paehlke's objective in *Environmentalism and the Future of Progressive Politics*, as can be seen from the title, is not confined to a discussion of the content and implications of environmental policy. In order to do justice to his book, it must be placed within a broader cultural and ideological context. John S. Dryzek has prepared the ground in this respect. He argues that the late modern predicament is symptomatic of the limitations inherent in the dominant form of rationality, i.e., instrumental rationality. We need to move beyond this reductionist perspective and to gain a more holistic understanding of ecological rationality. That is, freely determined individual and/or collective actions cannot be evaluated without reference to their environmental consequences, but these are not singular and discrete but rather symbiotic and systemic. To arrive at such an understanding, new forms of social and political practice (i.e., discourse and interaction) must be developed.[20]

In contrast with the liberal "open society," which is indifferent to the goals pursued as long as their formulation and implementation do not violate fundamental individual rights and freedoms, social democracy is sometimes defended on the ground that it provides the means for assessing the merits of these goals. Until now, the criteria deemed relevant to the selection of societal goals concerned distributive justice. Adding an environmental dimension to the definition of policy goals consistent with the social-democratic ideal should not prove to be an insurmountable problem. Indeed Paehlke supplies a list of such goals (270–72). They can be briefly summarized as a commitment to sustainable development, full employment, and international cooperation. The political community that would be best suited to the practice of this kind of progressive politics would promote participatory approaches to problem solving instead of technocratic social engineering: "Many of these proposals assume that reducing centralized bureaucratic power is compatible with enhanced environmental protection" (272).

Yet could not the communicative rationality inherent in this type of political life still serve to justify overly ambitious and potentially

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destructive projects? The new "design" perspective advocated by Dryzek,[21] as well as the community-based progressive politics outlined by Paehlke, differ categorically from technocratic planning in being much more modest in their assumptions concerning the availability of a knowledge base for engaging in planning activities. If that knowledge base is nonexistent and illusory, as ecologists, participationist social democrats, and conservative or skeptical liberals tend to think, the technocratic ideal ceases to make any sense. This is not the whole picture, however. While Paehlke seems convinced that the complexity inherent in ecosystems defies any attempt to find technological fixes to environmental problems, he entertains no doubt about the benefits of far-reaching social reforms achieved through social-democratic processes, as if these, together with the institutional requirements for their implementation, could be evaluated a priori without posing the same epistemological and ethical problems that face technocratic environmentalism. In other words, active community involvement in the management of sociopolitical systems is to render transparent what remains obscure to technocratic planners. While I readily agree that political practice can go a long way toward resolving abstract and disembodied epistemological paradoxes, there is still room for a healthy dose of skepticism about the merits of even as sound an idea as democracy. A contemporary Madison or Tocqueville would raise some pertinent questions not only about the social and economic, but also the environmental wisdom of participatory regimes. As long as majorities can be mobilized by political entrepreneurs, there is always a danger that the deliberative process so dear to contemporary participationists will degenerate into the "tyranny of public opinion." And whether public opinion will always be consistent with ecological wisdom is anyone's guess. Besides, decentralized, community-based problem solving could become even more coercive than state controls insofar as constitutional and other "check and balance" mechanisms might be difficult to reproduce on a small scale.

Paehlke's enthusiastic endorsement of André Gorz's thesis about the possibility and desirability of transforming the meaning of work is illustrative in this regard.[22] Liberation from work in a society that provides its members with greater leisure time and, by sharing employment, comes closer to full employment than is the case at present, may sound like a desirable goal. It is the kind of policy that one might expect a more participatory regime would seek to put in place. But could it not bring about unanticipated practices that might have damaging social, economic, and/or environmental consequences?

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After all, some leisure activities can be less than environmentally benign (e.g., the destruction of fragile desert habitats by cross-country motorcycles). Of course, it is entirely possible that, on the whole, the balance of the various costs and benefits of such a fundamental shift in values and habits would be positive. My point is simply that assessing the consequences of policies and programs reflecting inputs from democratic consultation and participation is not necessarily any easier than calculating the risks inherent in untried technological and/or bureaucratic planning experiments. (That there are merits in these democratic practices apart from the utilitarian evaluation of their outcomes is not something that I wish to deny; but if one values environmental integrity as highly as Paehlke does, then my argument retains all its force.)

Progressive environmentalism may turn out to be a valuable ideology, even if not as promising as the prudential, neoliberal environmentalism I allude to below. But environmentalist progressivism—an ideological perspective that also subsumes some of Paehlke's ideas—would be a different beast. It could, paradoxically, end up playing down the respect owed to the autonomy of the natural world even further than is the case at present. Environmentalist progressivism could rhetorically set itself above any criticism of its own understanding of ecological processes, while in practice pursuing goals that might well be damaging to these processes. Just as Marxist socialism, by definition, was not supposed to work against the interests of the working class, environmentalist progressivism would be incapable of self-criticism as far as environmental issues are concerned.

The intended target of these remarks is not Paehlke's entire book, but rather a few passages that could have been more carefully written. Paehlke's fundamental thesis, as I read it, is that environmentalism is still too weak to survive on its own in today's ideological climate, and therefore needs to enter into an alliance with one of the strongest contending ideologies. He chooses social democracy (whereas a certain version of liberalism might have been a more appropriate choice). But in asking "how might environmentalism play a role in the restoration of moderate progressive political ideas?" (243), he makes himself vulnerable to the criticism that what he is actually seeking to achieve is to ensure the future of progressive politics on the back on the environmental movement.

Paehlke would probably respond that lending support to an environmental movement still in its early stages of development, and breathing new life into the progressive movement, are mutually com-

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patible goals. To a large extent this is true, just as it can be argued that environmentalism and liberalism could mutually benefit from a closer alliance. But, as Paehlke recognizes on numerous occasions, there are also instances of contradictions between some of the tenets of environmentalism and progressivism. Generally, Paehlke resolves these contradictions by siding with environmentalism, especially as far as limits to economic growth are concerned, and trying to propose compromises that would also satisfy most of the groups and interests constitutive of the progressive movement. He does not do so very systematically, however. Because his book does not articulate explicit criteria for determining the limits that ecological imperatives create with respect to the satisfaction of individual and group aspirations, it offers no guidance for deciding what goals and values are more important when they cannot be reconciled. To state one's preference for a liberal regime does not solve this problem, either. The tolerance of competing values and goals must, at some point, give way to an assessment of their compatibility with ecological processes if, as I argued previously, the latter are characterized by a systemic but fragile unity and integrity.

Environmentalism and the Future of Conservative Politics

As mentioned already, Paehlke is careful to take note of the fact that the left-right dimension is not the proper measure of environmentalism as an ideology. While his goal is, nevertheless, to attempt a dialectical tour de force in order to reconcile environmentalism with the left, he concedes that environmentalism and conservatism have a few things in common. He alludes to a possible convergence between environmentalism and the kind of conservatism illustrated by thinkers like Edmund Burke and Michael Oakeshott—a form of conservatism that shares some common ground with the skeptical liberal tradition. These links, I suggest, are actually more promising than the ones Paehlke sees between environmentalism and the progressive movement. Unfortunately, Paelhke does not elaborate on these links between, on the one hand, Burkean conservatism and, by extension, skeptical liberals who side with Hume, Tocqueville, or Hayek, and, on the other hand, environmentalism. He simply points to the notion of prudence and to the sense of responsibility toward past and future generations as being central to that linkage (191). He even admits that "neoconservatism"—an ideology that he clearly dislikes—and envi-

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ronmentalism subscribe to some of the same values, including a preference for decentralization and a willingness to eliminate budgetary deficits (217). But he is much more interested in articulating the relationship between environmentalism and moderate social democracy. (Strict socialism and environmentalism, he admits, are far less easily reconcilable insofar as they are based on divergent assumptions regarding the merits of economic growth and central planning [206]).

A more "conservative" approach to the problems posed by ecology would start from the commonsensical premise that free markets are not necessarily the cause of environmental degradation. (I use here the term "conservative" in scare quotes to point out that what Paehlke and social democrats in general refer to as "conservative" ideas may actually reflect liberal or libertarian principles; this being said, genuinely conservative themes do surface in the discourse of the neoclassical and Austrian economists; moreover, I am not limiting my search for alternative ideas to libertarian thinkers.) In fact, as I explained already, it is often the *absence* of property rights and of market pricing that is to blame for pollution.

But economistic prescriptions provide only limited answers. In order to gain a fuller understanding of the complexity of ecosystems and of their interactions with human societies, and in order to appreciate at their just measure new conceptions of the role and responsibilities of humans in their relations with other species, we must address at a more fundamental level the dilemmas posed by the collapse of a whole system of thought that for brevity, and for lack of a better term, I shall call "positivistic scientism." The appeal and success of environmentalism reveal the extent to which many of our contemporaries aspire to recover something from the past, or some mythological image of it. They are deeply ambivalent about the mechanized and "disenchanted" modern world, even though they are unable to tear themselves away from the comforting certainties inherent in the technological worldview.

Not everything from the past, however, is worth recovering. All manners and forms of conservatism are not equally defensible. Already, some environmentalists have embraced a rather futile primitivism. But, as I pointed out earlier, the worst possible outcome of the neo-Romantic critique of modernity would be manifested in an irrationalist and reactionary exaltation of the "land of our ancestors," "the authenticity" of traditional communities threatened by (often foreign or "cosmopolitan") interests, and even in racialist or plainly racist quasi-Malthusian arguments about overpopulation and related

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themes. Admittedly, European countries are more prone to this kind of ideological aberration, but that is hardly a consolation, and North American variants of these themes do exist.

Classical liberals and nonreactionary conservatives have an important contribution to make in this respect. A rethinking of two of the most essential elements of the Scottish Enlightenment would yield precious insights into both the policy issues and the philosophical problems addressed by Paehlke. These two elements are skepticism and what, in today's idiom, we would call an evolutionary anthropology.

By systematically criticizing constructivist fallacies, among which environmentally destructive projects figure prominently, skeptical liberals can make a valuable contribution to the environmental movement, drawing attention to inconsistencies in government policies, opportunities for the expansion of property rights, manifestations of utopian scientism, and so on, without blaming scapegoats like "capitalism," "profits," or even civilization itself, as leftist environmentalists do.[23] (I do not specifically aim this criticism at Paehlke, but he sometimes also treats generalizations like "economic growth" as if they were concrete agents of environmental destruction.) Finding further inspiration in the Aristotelian notions of prudence and immanent developmental potentialities, they could seek to cultivate values that emerge spontaneously from practices in which a sense of time and place is evident, without falling into the trap of mythologizing the past. A skeptical critique of the discourse of professionalism and technocracy[24] is also needed to stress the inadequacy of our understanding of complex natural and societal phenomena, without, however, elevating the prejudices of a minority of Luddites to the status of a revealed truth. (In this respect, skeptical liberals and progressive, participationist democrats share some common ground.) Skepticism undermines plans that ignore or play down the complexity of ecosystems, without posing a threat to either the liberal commitment to freedom and tolerance or to environmentalism itself. The reason is that skepticism does not, by definition, prescribe a priori a specific ordering of values and goals. A progressive critique of societal practices, however, necessarily implies the ranking of these practices in relation to the rationalist/constructivist certainties or moral principles upon which the progressive project is built. And in this particular hierarchy of values, the ideas of positive freedom and collective progress are ranked at the top, thereby relegating environmental objectives to a subordinate position.

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Now, by insisting on a return to a more skeptical outlook, I am not advocating ethical relativism. An authentic commitment to environmentalism must be sustained by a reverence for life. And evidently a preference for liberalism entails, at a minimum, a positive valuation of liberty. But the epistemological and political expressions of these commitments can vary. I advocate skepticism precisely because raising doubts about claims to knowledge of the mechanisms whereby complex natural and societal systems can be controlled serves the purpose of protecting the environment against imprudent actions while leaving entirely open the question of deciding how, and in what context, these doubts will be expressed, discussed, and acted upon. Even reformulations of the rules defining liberal institutions are not precluded. The strategy consisting in proving that environmental objectives are progressive ones, by contrast, closes some options right from the start. It implies that we know much more than we really do about both nature and society.

Too single-minded a skepticism, however, can lead to retrenchment rather than to the kind of political action that would be commensurate with the gravity of the ecological problems facing us. (I take "political action" in a very broad sense here, one which cannot be reduced to merely demanding that the state intervene in a particular way; political action can result in constitutional reform, participation in public debates, establishment of voluntary organizations, etc.) Thus I now turn to the evolutionary perspective that one finds in the Scottish Enlightenment, but also in Hayek's work, in the new "sciences of chaos and complexity," and in many of the recent contributions to a post-Cartesian epistemology. These have in common that they pay special attention to the paradoxical relations that develop between autonomous entities and the structures or patterns of interaction that they produce, but also through which they are reproduced. Concepts such as spontaneous order, self-organization, synergy, or emergence are signposts along a road that points toward a still incompletely formulated theoretical system. At least intuitively, one can sense that there are intriguing parallels between the Humean-Burkean-Hayekian quest for the wisdom embodied in spontaneously evolved institutions, on the one hand, and an environmentalist sensitivity to the perplexing complexity of self-organizing ecosystems, on the other. But I do not mean to imply that the only kind of convergence that could take place between environmentalism and the tradition of political and economic thought I am interested in here would be a vindication of the latter by the former. New ideas, new practices, and new institutions are needed

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to ensure that this tradition continues to evolve and to remain relevant to our contemporaries. I would like to suggest that such cross-fertilization can indeed take place.

An interesting development, for example, in a wide variety of domains, including quantum physics, ecology, and feminism, is the new emphasis on the primacy of relations over the entities that these relations act upon. From this perspective, fields of potential relations are the formative matrices from which entities evolve into concrete and observable structures.[25] This emerging paradigm could be the catalyst for an even more profound redefinition of property rights than what I alluded to above (e.g., the creation of tradeable emission rights). What would justify a political reform of this nature is the need to move beyond environmental protection (e.g., pollution controls) and toward a greater sense of harmony with the natural world. The goal here is to reshape social institutions, such as property rights, in a manner consistent with an understanding of eco-social interactions as being organized into fields of potential structures, rather than in terms of reified rights claimed by individuals entrenched behind the metaphorical barriers delineating their atomized selves. ("Rather than" is not the best way of conveying this idea; it is not so much an "either-or" situation as it is a recognition of an emerging organizing principle operating on a somewhat different plane, perhaps as an ethical standard.)[26] What a relational understanding of property rights, as advocated by Gus diZerega, might entail in practice is still somewhat unclear.[27] At the very least, it would mean entrenching in law and/or in a new public morality a more complex set of criteria for determining the rights and obligations attendant on private property. A guiding principle would have to be an appreciation of the autonomy of both human and nonhuman beings. Thus remedial actions could be undertaken even in cases where, strictly speaking, no trespassing has taken place, even if some of the parties involved (e.g., nonhuman life-forms) cannot make any claim to property rights of their own. The articulation of these added dimensions would most certainly require debates and consultations on a scale extending far beyond the limits of parliamentary institutions. And actual changes in the legal definition of property rights might need to be accompanied by new constitutional protections. As for the sanction of reformulated property rights, it would most probably require the development of nonjudicial conflict resolution procedures of the kinds that are increasingly being used for the settlement of environmental disputes. All these arrangements would take some time to be put in place and would probably entail

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modalities that I cannot anticipate at the moment. Thus I cannot be much more specific. The point is, though, that private property is "private" in the sense that it stands in contrast to collective or state ownership, but insofar as it is defined and recognized in law and/or in custom, it is a relation between an individual or a group of individuals and a broader community; we now have to broaden the definition of that community to include certain aspects of the ecosystems we have learned to recognize as being essential to our well-being and our self-understanding as responsible dwellers on this planet.

Environmentalism signals a cultural change that will inevitably result in institutional changes, since institutions are not so much willed as they are evolved. An even more radical decentralization than the kind of community-based planning envisioned by Paehlke would be the pursuit of environmental goals through the unguided and freely determined choices of individuals or firms owning land and other resources under a more complex set of legal and customary rules defined not only with respect to short-term efficiency goals—as is the case with mechanisms like the creation of tradeable emission rights—but also to a more inclusive and comprehensive environmental ethic.

What I have outlined so far are some very tentative and sketchy proposals for developing a neoliberal environmentalism. But I have not attempted to shore up liberalism against the challenge posed by environmentalism. That is, I am not proposing an environmentalist neoliberalism that could be used to counter Paehlke's environmentalist progressive (or social-democratic) liberalism. Such a project would be regressive—for the same reason that Paehlke's progressive environmentalism is far more appealing than his environmentalist progressivism. The question is whether environmentalism is an ideological prop or a value in itself. In Paehlke's case, due perhaps more to rhetorical slippage than deliberate intention, the object sometimes seems to be to use environmentalism as a means of imparting a renewed vigor to progressivism rather than to integrate the two.

Environmentalism bears the promise of becoming a truly new worldview capable of transcending existing ideological divisions. While there are reasons to doubt that Paehlke's plea for a closer alliance between environmentalists and social democrats is the best way of fulfilling this promise, classical liberals and libertarians cannot claim to provide a better alternative without themselves redefining some of their fundamental ideas (e.g., property rights) and reordering their priorities. Until such time as this has taken place, Paehlke's tactical observation that, as a rule, environmentalists have found a more

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receptive audience among social democrats will, unfortunately, continue to ring true.

NOTES

1. Note that for Canadians, including Paehlke, "neoconservatism" is a term that refers primarily to laissez-faire economic liberalism and libertarian values rather than to neoconservatism à la Irving Kristol.
2. It is symptomatic of this possible risk that one of the last texts written by the reactionary and profoundly anti-individualist French thinker Charles Maurras (the founder of the Action Française movement) was about the risk of pollution in the Etang de Berre posed by the industrialization of the Marseilles region. See Raoul Girardet, *Mythes et mythologie politique* (Paris: Seuil, 1986), 104.
3. See John Baden and Richard L. Stroup, eds., *Bureaucracy vs. the Environment: The Environmental Costs of Bureaucratic Government* (Ann Arbor, Mich.: University of Michigan Press, 1981); Terry L. Anderson, ed., *Water Rights: Scarce Resource Allocation, Bureaucracy, and the Environment* (San Francisco: Pacific Institute for Public Policy Research, 1983); Richard L. Stroup and John Baden, eds., *Natural Resources: Bureaucratic Myths and Environmental Management* (San Francisco: Pacific Institute for Public Policy Research, 1983); Walter E. Block, ed., *Economics and the Environment: A Reconciliation* (Vancouver: Fraser Institute, 1989); and G. Bruce Doern, ed., *The Environmental Imperative: Market' Approaches to the Greening of Canada* (Toronto: C.D. Howe Institute, 1990).
4. Christopher Manes, *Green Rage: Environmentalism and the Unmaking of Civilization* (Boston: Little, Brown, 1990). Manes, an associate editor of the journal *Earth First!*, paints an extremely bleak picture of a ravaged planet plundered by rapacious capitalists and socialists alike. For Manes, the culprit is not a particular regime, nor even industrialism, but civilization itself. To stop the destructive folly that he sees at work all around him, he advocates such radical measures as "ecotage," i.e., the active destruction of the instruments of technological exploitation.
5. See Peter Vajk, *Doomsday Has Been Canceled* (Culver City, Calif.: Peace Press, 1978).
6. See Julian Simon, "Resources, Population, Environment: An Oversupply of Bad News," *Science* 208, no. 4451 (27 June 1980): 1431–7.
7. For example, see Richard L. Stroup, "Chemophobia and Activist Environmental Antidotes: Is the Cure More Deadly than the Disease?" in Block.
8. A similar argument is developed by Samuel P. Hays in the first chapter of his *Beauty, Health, and Permanence: Environmental Policy in the United States, 1955–1985* (Cambridge: Cambridge University Press, 1987).
9. Donella H. Meadows, et al., *The Limits to Growth* (New York: Universe

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Books, 1972); see also the somewhat more sophisticated analysis offered by M.D. Mesarovic and E.C. Pestel, *Mankind at the Turning Point* (New York: Dutton, 1974).

10. For an ironic look at the way in which such predictions have missed their targets, see John Tierney, "Betting the Planet," *New York Times Magazine* (December 2, 1990).
11. Robert C. Paehlke, "Democracy and Environmentalism: Opening the Door to the Administrative State," in Paehlke and D. Torgerson, eds., *Managing Leviathan: Environmental Politics and the Administrative State* (Peterborough, Ont.: Broadview Press, 1990).
12. See Amory B. Lovins, *World Energy Strategies* (Cambridge, Mass.: Ballinger, 1972), and "Lovins on Soft Paths versus Hard Paths," *Alternatives* (Summer/Fall 1976).
13. See Science Council of Canada, *Canada as a Conserver Society: Resource Uncertainties and the Need for New Technologies* (Ottawa: Supply and Services, 1977); and Ted Shrecker, *The Conserver Society Revisited* (Ottawa: Science Council of Canada, 1983).
14. Brian Tokar, "Social Ecology, Deep Ecology and the Future of Green Political Thought," *Ecologist* 18, nos. 4/5 (1988): 132–41.
15. See Manes, 123–36; and P. R. Hay and M. G. Haward, "Comparative Green Politics: Beyond the European Context?" *Political Studies* 36 (1988): 433–48.
16. For an analysis of the bias toward state allocation in the Science Council of Canada report on the conserver society, see John F. Chant et al., "The Economics of a Conserver Society," in Block, 1–89.
17. See Terry Anderson, "The Market Process and Environmental Amenities," in Block, 145–47.
18. See Jack Hirschleifer, Foreword to Anderson, ed., *Water Rights*, xviii.
19. See Norman R. Ball, "Technology, Business, and Leadership in a More Environmentally Conscious Era," in Doern, ed., *The Environmental Imperative.*
20. See John S. Dryzek, *Rational Ecology: Environmentalism and Political Economy* (Oxford: Basil Blackwell, 1987), Part 3.
21. See ibid.
22. André Gorz develops this theme in *Farewell to the Working Class* (London: Pluto Press, 1982), and *Paths to Paradise: On the Liberation from Work* (London: Pluto Press, 1985).
23. For a passionate attack on civilization and an apology for primitivism, see Manes, *Green Rage*, Part 4.
24. For a recent and refreshing example of this type of reflection, albeit more on the subject of the social sciences than on technology, see Charles E. Lindblom, *Inquiry and Change: The Troubled Attempt to Understand and Shape Society* (New Haven: Yale University Press, 1991).
25. See Gus diZerega, "Integrating Quantum Theory with Post-Modern

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Political Thought and Action: The Priority of Relations over Objects," in T. Becker, ed., *Quantum Politics: Applying Quantum Theory to Political Phenomena* (New York: Praeger, 1991).

26. Therefore, I cannot point to Jennifer Nedelsky's stimulating article, "Law, Boundaries, and the Bounded Self," *Representations* no. 30 (Spring 1990), as offering more than a very rough approximation of my conceptualization of a relational approach to property and other individual rights, because her critique of existing definitions of property rights is uncompromising and insists that a radical departure from liberalism is required.
27. See ibid., and diZerega, "Green Politics and Post-Modern Liberalism," CRITICAL REVIEW 1, no. 2 (Spring 1987): 17–41.

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Gus diZerega

SOCIAL ECOLOGY, DEEP ECOLOGY, AND LIBERALISM

Murray Bookchin's influential writings on social ecology attempt to unite the traditional leftist critique of liberal democratic society with contemporary environmental concerns. His work is undermined, however, in part by the dubious comparisons he makes between market systems and ecosystems, and in particular by his failure to understand that these systems operate in a like fashion according to impersonal principles of self-organization. In the case of the market, while this impersonal process facilitates cooperation and exchange, it also rewards the instrumental nature of the relationship between human and ecological communities. Deep ecologists are therefore right to criticize the unwillingness of participants in market societies to appreciate the intrinsic value of nature. The challenges they pose to the human community—to become less anthropocentric and to approach property rights with a sense of stewardship—may be taken up by an "evolutionary liberalism," which would strive to achieve harmony between humans and the natural world under the guidance of rules ordered by self-organizing principles.

When environmental organizations first began to attract a mass popular following, adherents of traditional political ideologies did not know what to make of them. Left and right alike denounced environ-

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mentalists as woolly-headed simpletons getting in the way of the more important debates they had been having for decades. Obstinately, though, neither environmentalists nor the issues that motivated them went away. Instead, they grew in numbers and intensity.

During the last two decades some advocates of traditional political ideologies have attempted to adopt environmental concerns as their own. This is particularly true on the left, where the environmental critique of modern society promised to be yet another club with which to beat the bourgeoisie. The right, broadly defined, has been less receptive, perhaps because so many of its adherents believe that if the left finds value in something, it probably isn't worth anything. Only recently have there been the beginnings of substantial friendly interest from that portion of the political spectrum.[1]

Is left-wing thought capable of really grasping the underlying character of environmental concerns? I will argue that left-environmentalist analysis does not possess the intellectual tools to develop even the rudiments of what one of its leading spokesmen, Murray Bookchin, terms "social ecology."

After explaining Bookchin's position as I understand it, I will first criticize it from a neoliberal or market-oriented position. His theory will be shown to be radically flawed. However, in the second part of this paper I will argue that Bookchin's shortcomings have little to do with his commitment to the environment. Ironically, he has been one of the most intemperate critics not only of liberal society, but also of the strongest philosophical foundation of environmentalism, which is often called "deep ecology." The third part will present a complementary deep ecological critique of Bookchin. This deep ecological perspective challenges many (although not all) neoliberal positions as well, but from an angle quite different from Bookchin's. I will conclude by arguing in part IV that "evolutionary liberalism" offers a solid foundation for ecological social theory, particularly when enriched with insights from deep ecology.

Perhaps more than any other leftist thinker, Murray Bookchin has sought to integrate environmental concerns into his critique of liberal society. Unlike most, he is no newcomer to these issues, having written on them for decades. *Our Synthetic Environment*, his earliest book on the subject, even predated Rachel Carson's *Silent Spring* by a few months.[2] Bookchin claims that the theory of social ecology he has developed "picks up the organismic thread in Western ontological philosophy that runs from Aristotle to Hegel, the social tradition initiated by Marx and Kropotkin, and the historical perspective opened by

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the age of democratic revolutions."[3] Many of the approaches Bookchin advocates have since been adopted by other leftist environmental writers.[4] Alas, in so doing they have also adopted many of his errors as well. Consequently, a critique of Bookchin can also serve as a critique of left environmentalism generally.

I. BOOKCHIN'S CRITIQUE OF MODERNITY

Bookchin condemns modern liberal society on both moral and practical grounds. Modern society is deeply and irreversibly immoral and as a result of this immorality, it is ultimately destructive to life itself. Not surprisingly for a leftist thinker, Bookchin thinks the most insidious villain of modern life is the market, and that all that is wrong with human existence can be traced to the types of relationships promoted by market institutions. Unlike most leftist thinkers, however, Bookchin finds the roots of our present crisis in the distant past, a past before the emergence of classes or the state.

Unlike Marxist analysts, Bookchin does not focus on class relationships as central to the evils that underlie modernity. Instead, he targets hierarchy, which he defines as the "cultural, traditional and psychological systems of obedience and command."[5] Domination and hierarchy existed before either states or classes. It is here, Bookchin argues, and not in class struggle, that the deepest sources of modern crises lie. Early "organic" hunting and gathering societies were egalitarian, he claims. But their primitive harmony was doomed to be overturned by population pressure, technological change, and manipulation by elders, shamans, and warriors.[6] Indeed, elders, shamans, and warriors, the first social specialists, "interposed themselves between people" and so "permanently mediated their relations," thereby establishing "the formal conditions for hierarchy and exploitation."[7] With the creation of resources sufficient to allow some to live at the expense of others' labor, hierarchy became coupled with outright exploitation. The development of hierarchy appears all but inevitable, according to Bookchin, for the "violation of organic society is latent in organic society itself. [Its primal unity] is weakened merely by the elaboration of the community's social life—its ecological differentiation."[8]

The critical step in the development of hierarchy, in Bookchin's view, was women's loss of parity with men; in the process hierarchy became established "not only objectively, in the real workaday world, but also subjectively, in the individual consciousness."[9] The most damaging impact of hierarchy is not its visible chain of command but

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rather the mode of consciousness it fosters. Hierarchical orders force those on the bottom to repress their own basic character. But to persist, this repression must be legitimated, even to some degree in the eyes of its victims. As a result, women and other oppressed groups came to accept the inevitability and even desirability of toil, guilt, and sacrifice. This psychological deformation prepares the ground for material exploitation.

As a mode of consciousness, Bookchin holds that hierarchy finds its earliest roots in the cradle, "where infants are taught to deal with 'otherness' as potentially hostile, as 'objects' to be controlled. It is the breeding ground for those primary distinctions based on gender that are inculcated in the young. Finally, it teaches the young to accept their place in the social pyramid."[10]

With the rise of a hierarchical mentality, the always-present differences between people were now perceived in terms of inferiority and superiority. The strong and successful individual became the one who is *superior* to others. Rivalry became a constant in human relationships.

Initially hierarchy and domination existed within a network of personal relationships, as they do even today in some tribal societies. But over time personal status roles became rooted in and justified by tradition and ultimately by impersonal institutionalization. The modern state is an expression of a situation in which domination and hierarchy have become so interwoven with our way of life as to blind us to the possibility of its absence.

According to Bookchin, the principle of hierarchy characterizes both state and market. The state is usually conceived in hierarchical terms by most people, and I have no problem with that as an initial approximation to institutionalized politics. But what about the market? So long as freedom of entry is maintained, markets appear at first glance to be equalitarian in the sense that all enjoy formal equality under the rules. But this image is misleading, Bookchin argues. Resource use was initially governed by the principle of usufruct, "the freedom of individuals to appropriate resources merely by virtue of the fact that they are using them."[11] The concept of private property, which enables me to deny others the use of something while not using it myself, did not exist.

With the rise of hierarchy came a heightened sensitivity to what is under one's control and what is not. The usufruct status of property thereby ceased to be taken for granted. When communal property became *consciously* chosen in the sense that people could imagine it

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being otherwise, a first step was taken toward private property. Private property, with its right to exclude non-owners, ultimately became a means for exercising control and domination over others.

As social relations became hierarchical they also became more calculated. Reciprocity became a conscious choice rather than simply being taken for granted. This marked a first step toward exchange and the market economy and their *instrumentalization of action*, under which others become means to one's ends.[12]

According to Bookchin, the liberal conception of justice affirmed the "inequality of equals." Liberal justice protects only the equality of inhuman abstractions while masking the inequalities persisting between real human beings. By contrast, organic societies tended "to operate unconsciously according to the *equality of unequals*," in the sense that everyone had access to the community's resources regardless of the contribution they made to producing them. Thus, while inequalities were not denied, they were compensated for, resulting in equity. "Equity, here, is the recognition of inequities that are not the fault of anyone and that must be addressed as a matter of unspoken social responsibility."[13] Everyone in organic society was guaranteed an "irreducible minimum." Bookchin admits that these societies made no real provisions for outsiders, but does not grasp the serious implications of this fact for his position, as we shall see.[14]

The triumph of private property and market relationships—i.e., liberal society—enshrined the principles of hierarchy, antagonistic competition, and perpetual insecurity. These circumstances created in people a limitless desire to accumulate ever more power, property, and status. Liberal society had to incorporate the principle of unlimited growth at its core, for only ever-greater accumulation seemed to promise people the security that was otherwise lacking. Bookchin admits that economic growth is needed to overcome scarcity, but he argues that the roots of scarcity lie in hierarchy and domination, not material insufficiency, and thus exist in liberal modernity, not in the human condition as such. "Just as capitalism leads to production for the sake of production, so too it leads to consumption for the sake of consumption."[15]

The impersonality of market relations, and their capacity to create needs that they can never fulfill, leads to their domination over all personal relationships. The ever-present need to produce draws more and more of the world into market relations.

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> By the middle of the present century . . . large-scale market operations had colonized every aspect of social and personal life. The buyer-seller relationship . . . became the all-pervasive substitute for human relationships at the most molecular level of social, indeed, personal life. [It] places the parties involved in the exchange process in an inherently antagonistic posture; they are potential rivals for each other's goods. The commodity—as distinguished from the gift . . . leads to rivalry, dissociation, and asociality.[16]

"The bourgeois commodity system becomes the historical culmination of all societies . . . in which human relations are *mediated* rather than direct or face to face."[17] Modern capitalism is simply the historical culmination of developments beginning with the claim to authority by shamans, elders, and warriors.

The human cost exacted by the triumph of the market is incalculable. Bookchin observes that "never before have personal relations become so impersonal and never before have social relations become so asocial."[18] Growing standardization, which he sees as stemming from the extension of market relations, leads to a "hollowing out" of human communities, and as their natural richness is dissolved there is a "concomitant hollowing out of personality itself. . . . The isolated, seemingly autonomous ego that bourgeois society celebrated . . . turns out to be the mere husk of a once fairly rounded individual." Thus, "simplification of the natural world has its uncanny parallel in the simplification of society and subjectivity."[19]

Standardized human beings are both the result of and fertile soil for the triumph of bureaucracy. Administrative agencies staffed by narrow professionals come increasingly to substitute for family, neighborhood, and town. People's spontaneous organizing capacities are increasingly shunted aside in favor of management by self-perpetuating corps of experts.

Because Bookchin believes he has discovered a profoundly destructive foundation underlying all market exchange relationships, he argues that the market is inherently immoral. Even the seemingly innocuous process of price formation "is not merely an impersonal 'amoral' computation of supply versus demand. It is an insidious manipulation of both supply and demand—an immoral manipulation of human needs as part of an immoral pursuit of gain."[20]

A thin line of corruption subtly permeates all modern social relationships. As these relationships become more complex and intertwined, the deformations of domination bred by hierarchy blossom forth as a poisonous weed threatening to choke off all life—the kudzu

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of the soul. For a nonhierarchical society needs "to alter every thread of the social fabric, including the way we experience reality."[21]

Our contemporary ecological crisis has its roots in social hierarchy and domination. We can live in peace with nature only when we can live in peace with one another. The solution to environmental degradation requires the radical restructuring of our social relations. Thus Bookchin attempts to combine traditional, radically egalitarian critiques of liberalism with the contemporary concern for nature's despoilation.

Ecological Rationality

Bookchin is one of a long list of thinkers who suggest that reason defined in purely instrumental terms is an inadequate, even irrational, conception of our highest faculty. There are two kinds of reason, he contends: reason as an instrument to achieve our ends and reason as an instrument to define our ends. Modern society has enthroned the former and ignored the latter. But "the current ecological crisis . . . reminds us that the preemptive claims of instrumental reason *are failures in their own terms*. . . . [The instrumentalist] quest for innovation threatens to tear down the planet itself."[22]

By virtue of being divorced from the matrix of relationships that sustain life and creativity, instrumental reason becomes the enemy of both. An effective critique of capitalism, therefore, must attack the dominant conception of rationality underlying capitalist society. Organic society provides a starting point for Bookchin's critique, for he argues that classical *technē* was "conceived holistically, in the sense that we today describe an ecosystem. Skills, devices, and raw materials were interlinked in varying degrees with the rational, ethical, and institutional ensemble that underpins a society. . . . All were regarded as an integrated whole."[23] Consequently, "the technical imagination of organic society . . . exhibited an enchanted synthesis of creative activity. No subject and object were placed in opposition to each other."[24]

Organic societies existed within an animistic world. Nature was not an inert force upon which human beings acted. Rather, men and women had a sense of reciprocal relationships with their environment. Consequently, in the realm of production, "both labor and the materials on which it worked were *coequally* creative, innovative, and most assuredly artistic."[25] Organic animism, Bookchin argues, provides a powerful corrective to today's simplistic scientism, which presupposes

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"that nature is orderly, and that this order lends itself to rational interpretation by the human mind, but that reason is *exclusively* the subjective attribute of the human observer, not of the phenomena observed." Bookchin claims that an "orderly world that is also rational," such as that posited by organic animism, "may be regarded as a meaningful world." To say that it is meaningful suggests the presence of "purpose, consciousness, intentionality, subjectivity—in short the qualities we impart to humanity as *distinguished* from nature, not to humanity as an expression of nature."[26]

Bookchin argues that if nature is seen as rational, it becomes "the *matrix* for an ethics, the source of ethical meaning that can be rooted in objective reality. . . . Nature need merely be *fecund* and *creative*—a *source* rather than a 'paradigm.' " When we finally understand ethics as growing out of and in harmony with nature, we will finally begin to overcome our "sense of incompleteness."[27]

A good Hegelian, Bookchin believes he has grasped the meaning behind evolution, and therefore how to enter into harmony with nature. There is "some kind of directionality toward ever greater differentiation or wholeness" in natural evolution "insofar as [nature's] potentiality is realized in its full actuality."[28] In evolution, "*an expanding whole is created by the diversification and enrichment of its parts.*"[29] Nature has an intrinsic tendency to develop in this way; things are "incomplete and unactualized in their development . . . until they are what they have been constituted to become."[30] This inner dynamic of natural evolution provides Bookchin's criteria for the good society. "Whether a society is . . . moral or immoral, for example, can be *objectively* determined by whether it has fulfilled its potentialities for a rational and moral society."[31]

A rational and moral society is a free society. Bookchin holds that "the degree of freedom in a society can be gauged by the kind of relationships that unite the people in it. If these relationships are open, unalienated, and creative, the society will be free. If the structures inhibit open relationships, either by coercion or mediation, then freedom will not exist."[32] But what would such a society look like?

He suggests that a glimpse of a liberated world comes from distinguishing between pleasure and happiness. Happiness, Bookchin writes, is "the mere satisfaction of *need*" whereas pleasure is "the satisfaction of our *desires*." Happiness is not enough. "The social quest for happiness . . . tends to . . . shrewdly devalue or repress the quest for pleasure"; it is "precisely in the utopistic quest for pleasure, I believe,

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that humanity begins to gain its most sparkling glimpse of emancipation."[33]

In his magnum opus, *The Ecology of Freedom*, Bookchin provides a history of Western utopianism, from its origins as a nostalgic look backwards at an early "Golden Age" to more recent movements which increasingly find perfection a promise of the future. Utopian movements arose throughout the Middle Ages, only to be destroyed by the power of rulers. Despite their failure, they hold open a vision of a liberated world and provide us a sense of the direction in which to travel in order to overcome the present.

Rational and moral communities that derived inspiration from utopianism would be ordered both internally and in their relations with one another along the fundamental principles of organic societies, namely usufruct, complementarity, and the provision of an irreducible minimum of material goods.[34] Politically, this means a system of free communities federated together for common projects but each controlled directly by its citizens, exercising their choices within a regime of public virtue.[35]

This vision returns Bookchin to some of his earliest political interests in how city life may be made more free and humane. Jobs would be "readily rotated" and "members of the communities would be disposed to deal with one another in face-to-face relationships rather than by electronic means."[36] Bookchin believes that such arrangements will enable us to achieve his ideal for human relationships: "that ineffable qualitative and disinterested sense of mutual welfare such as we expect in parental and sibling relationships."[37]

All this is well and good, but what institutional foundations would make such a society possible? The Greek democratic city-state seems to be Bookchin's ideal. He recommends that the citizens' assemblies of neighborhood self-government and small town meetings be resurrected. These assemblies then need to confederate into leagues. Further, political participation should school citizens into taking a wider view of issues than narrow self-interest, promoting republican virtue instead of bourgeois selfishness. Finally, the economy should be municipalized, thereby absorbing "the material means of life into communal forms of distribution."[38] But beyond this Bookchin says little. Like Marx before him, he leaves the details to the future.

II. A NEOLIBERAL CRITIQUE OF BOOKCHIN

From a neoliberal perspective I will develop two basic criticisms of Bookchin's argument. First, he does not understand problems of scale.

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Bookchin ignores differences between face-to-face interactions among people who know one another and those involving strangers, and he appears unaware of the "coordination problem" and how it applies to his praise of a decentralized society. Second, his view of competition and cooperation, both as they occur in the market and in nature, is much too simplistic. As a consequence, he understands neither markets nor ecosystems.

The virtues of organic societies are quite real, and modernity has brought a great loss by diminishing their role in our lives. But to a significant degree the virtues of premodern organic society grow from its small scale. Informal means for keeping the peace and preserving social mores can easily operate in such an environment. Help for those who are poorly off through no fault of their own can also flourish under such circumstances, as can friendliness and interest in the well-being of known others. Garret Hardin points out that the Hutterites, a growing group of small religious communities now numbering more than 50,000 members in the United States, deliberately limit the size of their communities to 150, for they have discovered that whenever a group grows larger than that, shirking of community work begins to increase faster than population. When population growth within a Hutterite community exceeds 150, it splits into two communities.[39]

On the other hand, strong pressure for social conformity is often the dark side of premodern society. This pressure, and the power of gossip and ostracism against the deviant, helped maintain behavior in accordance with group norms, and enabled such societies to dispense with the more impersonal means for enforcement characteristic of larger societies. In such societies ostracism and exile were often severe punishments for those who met with widespread disapproval.

Moreover, it has usually been in large cities (relative to their societies) that creativity in the arts and sciences best flourishes. In the relative anonymity of big cities, people who march to the beat of different drummers can more easily find kindred souls and avoid social disapproval than in small homogeneous communities. In a word, the good things about small communities stem from everyone's knowing and being interested in one another—and so do the bad things. Failing to appreciate this connection is a consistent problem among communitarian thinkers.[40]

Not all small face-to-face societies appear inclined to breed conformism. Many, though not all, Native American cultures, such as the Lakota, honored individuality. But those that did so were also fre-

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quently highly competitive, which I doubt would please Bookchin. In fact, the wide variety of modes of life among Native American peoples suggests that Bookchin's idealized image of organic societies is based at best on selective extrapolation from some peoples while ignoring the experience of others.[41] For an analyst who continually writes of the advantages of holistic reasoning and an ecological perspective, Bookchin displays a peculiar inclination to pick and choose the social features he likes and dislikes, without any apparent awareness that societies cannot be constructed simply by combining together all the things we happen to like and eliminating those we dislike.

There is a deeper shortcoming in Bookchin's one-sided praise of the virtues of small societies. They have traditionally been hostile to or indifferent toward strangers. This is even true of the more individualistic Native American cultures. Bookchin acknowledges that they rarely made provision for the needs of strangers, but never pauses to ask why this "oversight" occurred. When our relationships are intensely face-to-face we tend to mistrust those about whom we know little. Bookchin never wonders whether relationships depending upon personal knowledge of one another can be duplicated for humanity as a whole, where our knowledge of particulars must necessarily be small to nonexistent. All this has been discussed by F. A. Hayek, and it is a great pity that Bookchin appears unaware of Hayek's work.[42]

Face-to-face relationships, in contrast to impersonal market processes, promote intense human interactions. When friendly or loving, this is the greatest of blessings. But intensity is not always enjoyable because it is not always friendly. Wisdom and compassion, which would make it consistently so, are rare. Historically a world of small face-to-face communities or tribes has been a world of countless feuds and petty wars. We cannot know that this was so in prehistoric times, but the archaeological evidence is not encouraging.

Bookchin argues that we advance over the past "when we relate on the basis of a simple affinity of tastes, cultural similarities, emotional compatibilities, sexual preferences, and intellectual interests."[43] He apparently means that we choose these relations, rather than taking them for granted as in the case of small tribes. Is not such "freedom to choose" the bourgeois ideal? Is it not attained most readily within a large impersonal city, where those seeking different modes of life can locate kindred spirits? In large cities we can choose our friends. Such circumstances are extremely unlikely in the face-to-face societies he

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advocates. The large-scale achievement of intimacy he advocates within a small group would require intolerable conformity.

Bookchin appears unable to perceive the existence of any type of relationship that falls between the extremes of deep intimacy and impersonal hostility. Buyers and sellers in market orders are supposedly "polarized against each other," while it would be better for them "to care for each other's well-being, for them to feel deeply responsible to each other, and for them to be cemented by a deep sense of obligation for their mutual welfare."[44] This attitude goes well beyond respect and compassion for others. It is also impossible among people who do not know one another.

Further, the great gift liberal civilization gave to humanity, as Hayek and Popper so clearly explain, is that by making cooperation possible along purely abstract and procedural grounds, the scope for peaceful interaction was extraordinarily broadened. People no longer needed to agree about many specifics in order to benefit from peaceful cooperation.[45] This extension of the scope of cooperation came at the necessary cost of reducing the intensity of human relations.

This observation brings me to a fatal weakness in Bookchin's analysis. In any society needing to provide for more than the needs of a relatively small population, widespread impersonal coordination of goods and services becomes necessary. Bookchin would presumably not want to do without railroads to move food in times of localized crop failure or antibiotics to cure bubonic plague. But to build a rail line or manufacture vaccines requires a very widely integrated economic sphere. An autarkic county in Kansas, or even Vermont, could not do it. Anything like a modern economy *cannot* be based upon face-to-face relationships. It is simply too complex.

Here enters the calculation problem first raised by Mises, a problem that has undermined every attempt to create a nonmarket economy more complex than a village. Bookchin appears unaware that such a problem exists—even though Mises, echoed by Max Weber, first called attention to the matter in the 1920s, subsequently generating an enormous literature, and even though the problem has now become manifest in the fall of communist societies.[46]

What, then, of Bookchin's proposal for replacing the nation state with a federation of small independent city republics? I agree with him, and with writers going back to Aristotle, that the *polis* provides a framework where citizenship, that is, membership in a community of political equals, can be easily expressed. Nor is civic localism necessarily anachronistic. Jane Jacobs argues convincingly that cities, not

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nations, are the fundamental political and economic units of the modern world. Larger units, such as states and nations, have essentially arbitrary political boundaries.[47] There would be nothing objectionable about Bookchin's project if its purpose were to envision viable institutions able to encompass small-scale self-government, while simultaneously preserving the advantages made possible by modern institutions.

Bookchin's error lies not in his advocacy of municipal values, for in this regard he may well be right (even if they are not quite the cure-all he seems to suggest). Rather, his shortcoming is in failing to discuss the framework wherein small communities could cooperate together. What institutional ties would help them coordinate their activities? In this regard his apparent ignorance of the market's role in coordinating intricate relationships among independent entities is a fatal weakness.[48]

Self-Organization

Bookchin continually writes of liberated humanity's "self-organizing" potential. But the problems I have described raise the question whether, for all his talk of self-organization, Bookchin really understands this term.

Self-organization is a term as important in some of the physical sciences as it is in the social sciences. In both cases it describes nonreductionist processes wherein relatively simple reactions by the components of a self-organizing system result in complex patterns of order far beyond the capacity of its components to construct mechanically.

One of the foremost theorists of self-organizing processes in the physical world is Nobel laureate Ilya Prigogine. In Prigogine's thought randomness is a synonym for non-determinism, spontaneity, and creativity. Bookchin's problem with Prigogine seems to be that *randomness* does not promise enough *certainty*. Bookchin complains that "there is no way to determine whether the system will simply fall apart into 'chaos' or assume an immanently predictable form. . . . speculative thought is reduced to mere observation."[49] Prigogine provides his own answer, of sorts, to this attitude. "The idea of classical science with its determinism, implying the possibility of absolute knowledge, leads to intolerance and finally to violence. I think the idea of limited rationality more correctly expresses our situation. . . . Classical rationalism leads easily to some idea of a superman, a kind of James Bond who in

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every circumstance knows what to do. We have to live in and accept a pluralistic world, with a limited rationality. This doesn't mean failure." Unfortunately, like so many of his classical leftist brethern, Bookchin praises self-organization only when he knows it will do what he wants it to do.[50] The problem here is a problem that repeats itself throughout Bookchin's body of work. For all his praise of freedom and spontaneity, he has very firm views of where chemicals or people should freely go and what they should spontaneously do. Obedience to the theorist is freedom.

In the social sciences, Bookchin is in no better shape. He ignores the seminal work of Polanyi and Hayek, even though nobody in the twentieth century has done more foundational work on self-organization in human societies.[51] Some familiarity with their work might have helped Bookchin avoid avoid making silly claims such as that a "nonhierarchical society is no less random than an ecosystem."[52] Bookchin's own nonhierarchical societies are face-to-face affairs. People decide together what it is they will do. How can people take conscious control over their lives in this way, as Bookchin wishes, if the result is akin to an order attained without conscious intent by its members?

Self-organization, at least as it has been used by every serious thinker I have encountered *except* Bookchin, refers to complex orders whose particular characteristics are *not* the intended outcome of actions by those who make up that order. Such orders arise when participants follow, consciously or unconsciously, rules capable of coordinating their interactions in patterns *too complex for them to grasp*. Ecosystems exemplify self-organization, for the principles generating ecological order are completely unknown to most beings following them. In human society, language is an example of rule-governed self-organization. Few people consciously know the rules of their grammar, let alone comprehend their language and its growth in its entirety. Market prices, which are established largely impersonally, in the sense that no person or group controls them, are another example. (How a process like price formation, which in the long run no one controls, can be "insidiously manipulated" Bookchin never bothers to explain.) So the impersonal, price-guided market is much more akin to an ecosystem than is the consciously directed *polis* Bookchin favors.

Bookchin confuses "self-organizing" with "self-governing." A self-governing community is in important respects similar to an instrumental organization wherein all cooperate to achieve a common goal. The chief difference is that in the former, the goals are always subject

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to change and revision. Even so, this is the opposite of self-organization, where impersonal rules allow order to when beings pursue self-chosen goals in ignorance of what most others are doing.

This is not just a definitional quibble. Self-governance among many people can take place only when there are rules allowing each on balance to improve and enriching the chance that others will successfully attain their ends as well. Without such rule-constrained relationships, we must either all do what some authority tells us to do, or continually get in one another's way while pursuing diverse ends.

Bookchin's failure to understand self-organization is linked to his Promethean ideal of humankind's taking control of its own evolution and his opposition to mediation of any sort between one person and another. The problem with this position is that human relationships are *always* mediated in one way or another. As Hayek writes,

> It is . . . misleading to represent the individual brain or mind as the capping stone of the hierarchy of complex structures produced by evolution, which then designed what we call culture. The mind is embedded in a traditional impersonal structure of learnt rules, and its capacity to order experience is an acquired replica of cultural patterns which every individual mind finds given. . . . To put it differently, mind can exist only as part of another independently existing distinct structure or order, though that order persists and can develop only because millions of minds constantly absorb and modify parts of it.[53]

W. W. Bartley once noted that after being made public, knowledge takes on a life of its own, existing independently of even its creator. A book, for instance, can potentially be understood in some way not yet imagined. Such a potential may never be fulfilled. Even so, it is there. We know this because when a new implication *is* discovered, in retrospect it is seen to have been there all along.[54] When the theories we rely upon to help us control society themselves carry implications that we can neither foresee nor control, the ideal of rational social control over complex processes becomes absurd. Knowledge in this sense helps to constitute what we call the human mind—as Hayek argued.

Not only can we never control the implications of our own thoughts, which exist independently of our wills; our minds exist solely by virtue of our "mediated" relations with our world. Our most direct relationships with other people are mediated by all other relationships into which we enter. Many, perhaps most, of these relationships extend as far beyond our control as the independent market phenomena against which Bookchin rails. Even in a small face-to-face

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society, our individual identity is largely a unique gestalt of the social roles with which we identify combined with our historical and physiological attributes. Consequently, attaining Bookchin's goal of autonomous unmediated relationships with other people are *in principle* impossible—short, perhaps, of Zen Enlightenment, of which he is hardly a proponent.

As we shall see below, Bookchin's ideal of unmediated relationships is the opposite of the ecological perspective he claims to champion. Ecological insights suggest that everything is both related to everything else and mediated by everything else. By contrast, Bookchin's ideal is naïvely atomistic.

Given the necessary ubiquity of mediation, it is hard to comprehend Bookchin's antagonism to exchanging commodities. His hero, Hegel, had a much sounder appreciation of such things, as Bartley argued: "For Hegel, the act of turning something over to another, and thus 'alienating' it from himself, may be *simply giving it up*. For Hegel, nothing essential is lost."[55] This is, I suspect, the common human experience of the exchange relationships Bookchin finds so troubling.

Competition and the Market

When Bookchin writes about market relationships, he presents them in starkly dualistic terms: the market is competitive *rather than* cooperative. In this he is joined by many others who are equally confused, whether they favor or oppose market orders.

Market orders are neither uniquely nor unusually competitive. At the same time, cooperation is a very important, perhaps even dominant, feature of successful action within a market order.

Market competition occurs at many different levels. First, there is the general competition of all goods vying for the buyer's dollar. In this sense there is competition between cans of sardines, campgrounds, parka coats, porno movies, books about philosophy and automobiles as well as between different types of capital investment. Once we are past the point of seeking physical survival, we have the opportunity to choose among competing possibilities for our time and resources.

Second, there is competition between different goods which meet roughly the same needs or wants, from the buyer's point of view. For example, faced with the need for transportation a buyer may consider the relative merits of different makes of cars—new, used, leased, and rented—along with bicycles, trains, motorcycles, buses, taxis, air-

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planes, and different combinations of these. How their merits are evaluated will vary from person to person.

Third, there is competition between producers of similar goods: Plymouth, Ford, and Chevy.

Fourth, there is "Schumpeterian" competition, where an entrepreneur develops an entirely new good that can render obsolete whole classes of older products. Hardly anyone today buys slide rules now that pocket calculators are so inexpensive.

Fifth, there is competition among businesses to attract and keep the best employees, and among employees to get and keep the best jobs.

All these types of competition are important in market orders, but those forms that are most *unique* to them (and other self-organizing social systems) are largely impersonal and anonymous. By contrast, the fifth form of competition, which is often the most personally irksome, is hardly unique to market institutions. Political parties, bureaucracies, and academic departments all have more than enough of it. It is not competition that is unique to markets, it is a particular type of competition: that depending upon free access to willing buyers.

Nor must competition be undesirable within appropriate institutional contexts. When competition and conflicts of interest do exist, in the market or in any other self-organizing system, it is precisely the role of impersonal procedures and processes to ensure that they stay within bounds, tending to benefit the system as a whole, in the sense of promoting the general well-being of most of its participants most of the time. When those threatened by competition are able to personalize the principles and rules under which they operate, they usually do so in order to shield themselves from unpleasant effects which benefit others. Tariffs and occupational licensing requirements may be imposed as a result of their fears. But in so promoting their personal interest, these people undermine the system's long-term viability.[56]

If animals could alter ecological rules in their individual favor, this problem would be as pressing for an ecosystem as it is for self-organizing social systems. If deer could vote, it is likely that all wolves, cougars, and coyotes would be imprisoned. Some deer—those that otherwise would have been eaten—would be better off as a result. In the short run, perhaps all would be, since they now need not *worry* about being eaten. But these benefits would be short-lived and at the ultimate expense of the community as a whole, including future generations of deer. In the absence of predators, overpopulation would—as it frequently has—devastate the land's capacity to carry even the

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original population in good health.[57] Bookchin's breezy dismissal of competition is necessary if his utopia is to sound plausible, but in fact it is bad ecology and bad social science.

Cooperation and the Market

Most advocates of markets insufficiently acknowledge that high levels of *cooperation* go with the first four forms of competition listed above—forms of competition largely unique to the market order. For instance, there must be cooperation between suppliers of raw materials and those who produce goods from those materials, and today the importance of cooperative relations within a firm's internal organization is increasingly recognized.

The reasons for this oversight are, so far as I know, barely explored. Part of the explanation arises, I think, from many early economists' fascination with how outcomes good for society as a whole could arise from people pursuing narrowly self-interested motives within a market context. The widespread one-sided reading of Adam Smith gives evidence for this hypothesis.[58] Since the market could be explained without reference to any motives but the narrowest, many were attracted by theoretical models based on what today we call "economic man." Further, theorists often concentrated on the market's most impersonal processes, such as price formation. Therefore, neither the theoretical model of human behavior nor the theoretical questions that attracted many economists predisposed them to look for the cooperative behavior essential to the market order.

Today the model of economic man has so come to dominate economic theory that many economists seem to believe it is an accurate description of human nature. Only a few economists, such as Hayek and Ludwig Lachmann, have perceived that *Homo economicus* is an *unnecessary* construct of economic theory. Many other Austrian economists kick economic man out the front door only to let him in the back. While they formally disavow the model, by defining human action in *purely* instrumental terms they essentially reconstruct him.[59]

To be sure, if economic men did exist, they would generate the same sort of price system as exists in a market economy. But this is because the market is impersonal. An impersonal economy populated by altruists with as little knowledge of the impact of their choices as is possessed by *Homo economicus* would generate equally orderly market processes. Altruists and egoists would choose different mixes of consumer

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goods and would likely choose different means for organizing enterprises, but the market *process* would be similar (although it would probably operate more satisfactorily with the altruists). *Impersonality is generated by the system and cannot be directly traced to the character of the human beings operating within it.*

Economic man is unlike almost any living human being. For such a person everything and everyone is a means to his or her ends. Because a society consisting of such beings could generate a market, if they followed laws of property and contract, simple-minded theorists accept this caricature as an adequate basis for "social" theory. They assume that because most of our actions have an instrumental *aspect*, they can without serious distortion be analyzed as if they were completely instrumentalistic.[60]

In fact the empirical evidence strongly suggests otherwise. Psychologist Kenneth Lux points to a large body of research indicating that purely instrumental motivation has a negative impact upon that most characteristic human attribute, creativity. For example, he cites studies in which one group of college students was told its members would receive monetary awards for creating good collages. A second group received no such promise. "When the artistic performance of the two groups of students was judged in blind ratings by artists, the first group was consistently found to be less creative than the second."[61]

The economic man construct has blinded most economists to many cooperative possibilities within the market. For example, the successes of worker-owned firms in a variety of businesses indicates that businesses that rely on cooperative rather than merely instrumental motives can compete successfully with more traditionally motivated companies. Indeed, a major problem with many worker-owned cooperatives has been that they are so *successful* within the marketplace that their shares became too valuable for new workers to afford. Spanish cooperatives have apparently found a way around this stumbling block; the worker-owned Mondragon cooperatives, which began in 1956 with 24 worker-owners now employ 20,000; their bank, begun in 1959, was within 30 years one of the two dozen largest in Spain, with assets of over $2 billion. Since the bank's inception, over 100 independent worker-owned businesses have been started, only three of which have failed. The equivalent failure rate for new businesses in the United States is 80 percent.[62]

Clearly there can be more cooperation in the market than acknowledged by most economic theory, and the potential for even greater cooperation has only begun to be investigated. In this respect, theo-

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rists whose cramped and inhuman models prevented them from appreciating the full possibilities of the market order they praised will in retrospect be seen to have seriously impeded our understanding and appreciation of this institution.

What is unique about market competition is that anyone is free to enter into any market if he or she can obtain the funding to do so. Exclusion is not legally enforced. It is hard for a few to exclude others from a market except by keeping their prices low and/or their quality high. Large size is no guarantee of freedom from unexpected competition, as GM and IBM have found. Impersonal competition helps protect the many from the monopolistic cooperation of the few. Cooperation and competition do not exist along a continuum, nor are they opposites; their relationships are much more complicated and paradoxical. *Who* competes, *who* cooperates and *how* are the relevant questions when examining *any* social institution, not whether "competition" or "cooperation" exist. Both do and probably always will.

Neither Bookchin nor his fellow leftist critics can be seriously faulted for failing to have a balanced view of market cooperation and competition when this deficiency characterizes most defenders of the market as well. But Bookchin misunderstands not only economic but ecological competition. For example, he writes that "seen from an ecological standpoint, life-forms are related in an ecosystem not by the 'rivalries' and 'competitive' attributes attributed to them by Darwinian orthodoxy, but by the mutualistic attributes emphasized by a growing number of contemporary ecologists—an image pioneered by Peter Kropotkin."[63] But he quotes, in support of this assertion, William Trager's statement that

> the conflict in nature between different kinds of organisms has been popularly expressed in phrases like the "struggle for existence" and the "survival of the fittest." Yet few people realized that mutual cooperation between organisms—symbiosis—is just as important, and the "fittest" may be the one that helps another to survive.[64]

Clearly, Trager does not intend to imply that cooperative natural relations are the only or even the dominant kind.

Bookchin's confusions about the relationships between competition and cooperation are important in understanding the inadequacies of his social theory. His one-sided reading of the market as purely competitive and of natural ecologies as overwhelmingly cooperative blinds him to the fascinating similarities between them. One of the most

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astute environmental philosophers, Holmes Rolston III, more clearly portrays competition and cooperation in the natural world:

> Like business, politics, and sports, ecosystems thrive on competition. In a natural community the cougars are the critics (if we may put it so) that catch the flawed deer, and thereby build better ones, as well as gain a meal. Alternatively, the fleet-footed deer test out any cougars slow enough to starve. . . . In both [human and natural] communities, helping is subtly entwined with competition. There is a biological, though not a cultural, sense in which deer and cougar cooperate, and the integrity, beauty, and stability of each is bound up with their coactions.[65]

These relationships are often extremely subtle. For example, Rolston notes that

> insects (even outbreaks of them) seem often to provide benefits of which we are yet little aware, as we once were unaware of the benefits of fire. Aphids secrete sugars that stimulate nitrogen-fixing bacteria in the soil, and short-lived insect grazers permit to long-lived plants rapid nutrient recycling, something like that accomplished more slowly by seasonal leaf-fall and decay. Some species of grasses coevolved with grazing ungulates; neither can flourish (or even survive) without the other. Selection pressures will routinely drive adaptation and counteradaptation toward minimum disturbance, that is, to check competitions by forced cooperations.[66]

The Hobbesian "state of nature" begins to seem just as inaccurate a description of the natural world as of the social. What looks like a war is actually more akin to those marvelous Balkan dances in which individual dancers strive to outdo one another, but always within the rules of the dance as a whole.

Darwin correctly perceived the strong similarities between the natural and the human world. Hayek has pointed out Darwin's debt to Hume's theory of social evolution, which was most assuredly neither egoistic nor one-sidedly competitive.[67] Unfortunately, Darwin also got his inspiration for natural selection after reading Thomas Malthus, a far less subtle thinker than Hume. While hardly denying the importance of cooperation, the initial Darwinian theory of evolution, and social Darwinism as well, seriously overemphasized competitive relations. Even so, like Hume and Adam Smith, Darwin held that altruism was as fundamental to human nature as egoism.[68]

Bookchin's procrustean bed of social ecology stretches the processes of nature and mutilates those of the market in order to fit them into the facile categories of "dialectical naturalism." Despite the advantage of over a hundred years, Bookchin's treatment of society and nature is far

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worse than that of Darwin and his successors, for he loses sight of similarities between the two entities that the earlier thinkers grasped—however much they may have overemphasized the importance of competition and underemphasized that of cooperation in both.

Ecology, Catallaxy, and the Market

In comparing ecological and market processes we open up another fascinating question: what kind of market? The dominant reductionist approach to scientific ecology, termed "bioeconomics," is similar to the neoclassical view of the economy in allocating a given set of resources so that as many competing ends are served as possible, with the most important being served first. Such an economy can be viewed as operating efficiently or inefficiently, like the economy of a household or a business. Thus, ecosystems are analyzed in terms of their "net production," that is, how many calories of energy are left over after the energy/matter consumed in respiration is deducted. Such a conception studies the "energy budgets" of plants and animals under various circmstances. Its language is characterized by the theoretical importance of "productivity," "efficiency," "yields," and "crops." Natural ecosystems are analogized to industrial concerns.

Hayek has distinguished between an economy in the sense of a firm's budget and what he terms a "catallaxy." The difference is that while an economy serves a single set of ends, a catallaxy "serves the multiplicity of separate and incommensurable ends of all its separate members."[69] This distinction proves crucially important in determining how we think about ecology. Discussing the implications of bioeconomics, Donald Worster argues that "it is not fanciful to attribute to the mechanistic, energy-based bioeconomics of the New Ecology a built-in bias towards the management ethos, and even toward a controlled environment serving the best interests of man's economy."[70]

Just as the traditional model of an economy encouraged the delusion that central economic planning was both possible and desirable, so the bioeconomic model encourages, for the same reasons, the belief that central environmental management is desirable. In each case the system is conceived as a production organization that should operate efficiently in attaining some goal or set of goals. But how justified is this view?

Perhaps it should be observed in this regard that calorie-production

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analysis need make no reference to *living* processes; it is so reductionistic that it abstracts from life itself. Its inspiration was modern thermodynamic physics. Ironically, later developments in physics have undercut its mechanist and reductionist ideal.[71] Biological reductionism has been shown to confront serious theoretical barriers to completing its program successfully. As physicist Paul Davies observes, "each new level in the hierarchical organization of matter brings into existence new qualities that are simply irrelevant at the atomistic level."[72] Equilibrium thermodynamics is apparently a deeply misleading framework for comprehending living systems.[73] So we are brought back to insights developed by Michael Polanyi, perhaps the first theorist of self-organizing *social* institutions. While society cannot be reduced to biological processes, both ecology and society appear to be examples of self-organizing systems, or spontaneous orders.[74]

We are also brought back to earlier, more holistic ways of viewing ecology in which processes, not structure and function, merit the most theoretical attention.[75] Most spectacularly, recent years have seen the rise of the "Gaia hypothesis," developed by James Lovelock and Lynn Margulis, which resurrects the holistic argument on a far vaster scale than before, arguing that the earth itself is best conceived as a living entity.[76]

Holistic or organismic views of ecology did not attempt to reduce the natural world to any single set of standards. They were instead focused upon the incredible intricacy of environmental relationships and, after Darwin, the extraordinary creativity of evolutionary processes. Indeed, when we tear our eyes away from the lifeless abstraction of calorie production, in order to encompass the multitude of lifeforms around us, we no longer know how to make such a system "efficient" because no single goal or scale of goals exists.

In discussing ecological ethics, Rolston notes that

> there is a kind of order that arises spontaneously and systematically when many self-concerned units jostle and seek their own programs. . . . In culture, the logic of language and the integrated efficiency of the market are examples. . . . In nature, our ecosystem systematically generates a spontaneous order, an order that exceeds in richness, beauty, integrity, and dynamic stability the order of any of the component parts, an order that feeds (and is fed by) the richness, beauty, and integrity of these component parts. The organismic kind of creativity (regenerating a species, pushing to increase to a world-encompassing maximum) is used to produce, and is checked by, another kind of creativity (speciating that produces new kinds, interlocking kinds with adaptive fit plus individuality and looseness).[77]

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Similarily, Hayek writes that "a policy making use of spontaneously ordering forces . . . cannot aim at a known maximum of particular results, but must aim at increasing, for any person picked out at random, the prospects that the overall effect of all changes required by that order will increase his chances of attaining his ends." He adds that "the goal of such a policy must be to provide a multi-purpose instrument which at no particular moment may be the one best adapted to the particular circumstances, but which will be the best for the great variety of circumstances likely to occur."[78] This is Rolston's "integrated efficiency." Interestingly, a variant of Hayek's standard for good public policy provides a good test of ecological policy. How might the greatest variety of organisms be most encouraged? Or, closer to his way of phrasing it, how to encourage circumstances such that any particular variety of organism, chosen at random, will be most likely to flourish? The variety of organisms is analogous to the variety of unknown plans that the market process can accommodate. A type of organism, as distinguished from an individual, is, in a sense, a plan for living. Each separate type offers a different approach to how life can be lived.

Such a standard, unlike efficiency, is also in harmony with long-term evolutionary processes. Stephen Jay Gould has made some wise observations about the role of efficiency and creativity in evolution. He argues that

> the watchwords for creativity are sloppiness, poor fit, quirky design, and above all else, redundancy. . . . Bacteria are marvels of efficiency, simple cells of consummate workmanship, with internal programs, purged of junk and slop, containing single copies of essential genes. But bacteria have been bacteria since life first left a fossil record 3.5 billion years ago—and so shall they probably be until the sun explodes.[79]

If evolution operated primarily on the basis of efficiency, it "would generate no structural complexity, and bacteria would rule the world."[80]

Despite at least five widespread periods of mass extermination, along with our present quite differently caused one, life on earth has been most spectacularly characterized by an ever-increasing variety of species. As Rolston puts it,

> Regularly in ecosystems . . . order may be a more comprehensive, complex, fertile order just because it integrates (with some looseness) the know-how of many diverse organisms and species; it is not an order built on the achievements of any one kind of thing. A culture is richer, more diverse, more beautiful because it is the product of tens of thousands of minds. . . . Analogously, ecosystems are in some respects more to be admired than any

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> of their component organisms, because they have generated, continue to support, and integrate tens of thousands of member organisms. The ecosystem is as wonderful as anything it contains. Producing adaptive fits and eliminating misfits, it is the satisfactory matrix, the projective source of all it contains. It takes a great world to breed great lives, great minds.[81]

III. DEEP ECOLOGY VS. SOCIAL ECOLOGY

After confronting the false dichotomy between cooperative precapitalist societies and competitive market societies, many readers will conclude that we no longer need concern ourselves with Bookchin's social ecology. Ecological insights, they may suspect, offer little new to social science. Free-market neoliberalism easily demonstrates the fallacies underlying much of Bookchin's social and political analysis. The environmental movement, to the degree that it has legitimate complaints, can easily be integrated into neoliberal thought.

In my view this judgment would be premature. For Bookchin's social ecology has also been strongly challenged as insufficiently environmentalist by several "deep," "holistic," or "transpersonal" ecologists. The issues they raise are of interest to neoliberal social theory, for they concern humankind's proper place in the modern world. Further, the holistic critique supports one stream of neoliberal thought even as it undermines another.

Modern Western thought has been fairly consistently Promethean in its orientation, seeking to exalt the human at the expense of the nonhuman. Nineteenth-century socialist, anarchist, and liberal thought, particularly in their most optimistic, individualistic, and technocratic modes, are Promethean in this sense. One of the things that makes Bookchin's work interesting is his attempt to incorporate ecological reasoning into a utopian, Promethean ethos. Deep ecologists, by contrast, argue that ecological reasoning is a radical challenge to Western Prometheanism, for it promises to reintegrate humanity into the natural world. In this sense deep ecology is biocentric rather than anthropocentric.

Were it not for his many attacks on deep ecology, a superficial reading of Bookchin might suggest that he is a deep ecologist himself. He consistently praises holistic and organismic reasoning. He argues for "a distinctive—albeit by no means hierarchical—place for humanity and society in natural evolution."[82] In his ideal world, humanity would "neither give nor take, it would actually *participate* with nature in creating the new levels of diversity and form that are part of a

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heightened sense of humanness and naturalness." All this sounds harmonious with deep ecology.[83]

A closer reading shows that it is not. Bookchin's concept of "participation" is rather one-sided. "Humanity's awareness of itself, its ability to generalize this awareness to the level of a highly systematic understanding of its environment . . . and finally its capacity to alter itself and its environment systematically by means of knowledge and technology, places it beyond the realm of the subjectivity that exists in 'first [prehuman] nature.'" Thus "humanity has been *constituted* to intervene actively, consciously, and purposively into 'first nature' with unparalleled effectiveness and alter it on a planetary scale." This constitution "has given rise to a 'second nature,' a cultural, social, and political nature that has all but absorbed 'first nature.'"[84] Through humanity, nature "knows itself and can guide its own evolution."[85]

Interestingly, Bookchin also writes that he does

> not believe that humans, owing to a "commanding" place in a supposed "hierarchy" of nature, can "exploit" nature. Words like *commanding, exploitation,* and *hierarchy* are actually social terms that describe how people relate to each other. Insofar as people and the means by which they ostensibly try to command, exploit, or dominate nature are in fact natural phenomena themselves, one begs questions whose answers are already implied in the query itself.[86]

If I understand this murky passage, Bookchin is suggesting that it is conceptually impossible to command or exploit the natural world because such things by definition cannot be done to nonhuman beings. Apparently, when we stop exploiting one another, we will stop exploiting nature, except that we cannot exploit nature, even if we can exploit one another. But are we part of nature? Bookchin has defined the problem away by denying, or at least obscuring, our ability to think about it. In doing so, *as a practical matter* Bookchin has relegated all nonhuman nature to simple means for human ends. There is nothing new here. James Watt, Ronald Reagan's first Secretary of the Interior, would have little with which to argue on this point.[87]

But what of the merit of Bookchin's argument? It certainly seems to be well within the mainstream of Western thinking. To explore the shortcomings of this thinking, let us begin with two images. Evolution, from Bookchin's perspective, is a pyramid at whose apex stands the human race. From a deep ecological perspective evolution is more like a bush, with branches growing out in many different directions. One of these branches is the line that has thus far culminated in *Homo*

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sapiens. A bush has no central trunk heading in one direction. Nature is creative *in many directions at once*, not simply because it brought forth humanity. And each branch contributes to the overall well-being of the bush itself. To be sure, some branches can be pruned, but prune too much and the bush is weakened or killed. In *this* sense there is a kind of equality among the branches. On balance, each contributes to the well-being of all, so long as purely natural processes are involved.

This perspective can be defended in terms of rational self-interest. I will be better off in the long run if I take care of the rest of the ecosystem. But deep ecologists argue that nature's value is deeper than simply its utility for us.

Value in Nature

Central to the deep ecological perspective is the insight that nature possesses value independently of our attitudes toward it. Human beings are not the only loci of value in the universe, and appropriate human action respects other beings as having value in their own right. As a consequence, the view that other things obtain their value solely from their utility in fulfilling human purposes or from the pleasure we derive from experiencing them is wrong.

As Warwick Fox has noted, "the single most distinctive feature" of deep ecology is its "experiential aspect."[88] Probably no one who believes that nature has intrinsic value came to this conclusion through being persuaded by an argument. To some of us, this writer included, the intrinsic value of nature is obvious, based upon our own experiences. For us, nature's value is, in a sense, irreducible. At its root, taking this position is like saying love is a high and intrinsic value. In both cases the proposition's proof comes from experience, not argument.

It follows that none of the arguments I can offer for such a perspective convinced me, even though I believe them to be true. My views arise out of long-term and oft-repeated experiences. My arguments are after-the-fact. If they are judged weak, it may be because they reflect mostly my incapacity to communicate my understanding, not the understanding itself. It would take other experiences, hopefully enriched by explanatory arguments, to demonstrate to me that my perception of nature's intrinsic value is mistaken.

Nevertheless, providing arguments for nature's intrinsic value serves two purposes. First, it allows those agreeing with this insight

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more thoroughly to understand its implications. This is particularly important with regard to nature, for it possesses instrumental as well as intrinsic value. We all need to consume natural things in order to live. There is a necessary tension between the instrumental value of the things in our environment we need to use in order to live, and their intrinsic value as worthwhile on their own terms. Some ways of exploring these tensions will prove fruitful, others not. Some will help resolve value disputes, others may obscure them.

A second purpose arises from the character of modern society. Almost uniquely among the world's cultures, Western modernity conceives of nature as a storehouse of resources, and nothing more. Or rather, the West's dominant intellectual and theoretical conceptions of the world do so. For there has been dissent. The traditional human view of nature as possessing intrinsic value has never been entirely extinguished. In the nineteenth century especially, transcendentalism and Romanticism offered an alternative view of nature and our place in it.[89] In practice, many people realize that there is more to nature than raw materials, so they continue to speak of "unspoiled" wilderness, "virgin" forests, "pristine" waters, and the like. But these terms are granted little weight in the social and physical sciences. Our dominant intellectual traditions have all but robbed us of a vocabulary for saying that nature's value is in some way more than that allowed by enlightened utilitarianism.

There are also those who vehemently deny intrinsic value to nature. Value, these people argue, is either a subjective feeling or something that is in some sense inherent in human nature. Nature exists for human use. If humans did not exist, no value would exist. Often, such people like to claim that deep ecologists embrace the irrational and are opposed to human well-being.[90]

Such skeptics should ask whether, by ruling out the intrinsic value of nature in advance, they render themselves incapable of evaluating arguments for it. An example of such foolishness is the egoist who forces even the most altruistic behavior into his mold. His position ceases to be very interesting except as an indication of his psychology. Those denying that intrinsic value can exist outside of human beings should ask themselves whether their theoretical framework can really address this question fairly.

Questions of value and worth ultimately arise out of our experience. It is the character of that experience that is critical for evaluating whether or not value exists, and if it does, whether it exists indepen-

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dently of our attitudes toward it. In this respect Erazim Kohák's point needs to be pondered by all social scientists:

> Even a philosophy of science, if it is not to become a sterile, self-confirming dogmatism locked within a wholly formal system of its axioms and their implications, must retain an independent access to the primordially given nature of lived experience in terms of which it can evaluate the adequacy of the reality construct assumed and used by a particular science.[91]

I begin my own argument for the nonanthropocentric value of nature by unpacking an experience I hope has been had by all: being captivated by a beautiful sunset. In such a sunset, shifting clouds, and the color and brightness of the fading light impresses almost everyone as beautiful. Along with its beauty, one of the most interesting things about a sunset is that we can do nothing to influence it. We must take it as given.

Something we confront as a given cannot be treated instrumentally. Indeed, the most intense way to experience its beauty is to think of nothing else while looking at it. In such a case we do not compare it to other sunsets, or to the dawn, or worry whether we would be better off reading a book. We simply look at it. Yet we do so alertly. We focus intently on the experience.

If we begin to compare the sunset with one we remember having seen in the past, we immediately distance ourselves from the present experience. As we evaluate it the sunset becomes an ever more abstract experience: a member of a class, sunsets. In evaluating we draw back from our immersion in the experience. Whether one does so as a meteorologist or as an art critic, the sunset then becomes more and more a speciman rather than a unique experience.

As we withdraw from experiencing the sunset, the intensity of its beauty fades. This may be replaced by new information of value to us: "Judging from the clouds, it looks like rain later tonight." Or maybe we simply stop paying attention to it. Either way, the particular quality of beauty we experienced simply by immersing ourselves in the experience is gone. Abraham Maslow gives a clear description of the distinction between abstract evaluation and experiencing beauty.

> Abstracting is more active and interfering . . . more selecting-rejecting than the aesthetic . . . attitude of savoring, enjoying, appreciating, caring, in a noninterfering, nonintruding, noncontrolling way.
>
> The end product of abstracting is the mathematical equation, the chemical formula, the map, the diagram, the blueprint, the cartoon, the concept, the

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> abstracting sketch, the model, the theoretical system, all of which move further and further from raw reality. . . . The end product of aesthetic perceiving . . . is the total inventory of the precept, in which everything in it is apt to be equally savored, and in which evaluations of more important and less important tend to be given up. Here greater richness of the precept is sought for rather than greater simplifying and skeletonizing.[92]

Experiencing nature as beautiful on its own terms happens when we are alert but nonjudgmental. This experience can happen unexpectedly and last only a brief moment. In such a case, our immediate perception of beauty is so swift that it is not plausible to reduce it to a calculative act. We take the experience of beauty as an irreducible given. We set aside, or never become aware of, a calculating, manipulative, or evaluative stance toward it.

Contrast looking at a sunset in this way with trying to take a beautiful photograph of it. Usually the photographer looks at the scene *with a picture in mind*. He or she will consider where the photo's borders should be, what should be foreground, whether or not to include this cloud or leave it out, and so forth. For the photographer the experience of looking at a sunset will be qualitatively different, and *less moving*, than for the same person simply experiencing the scene. The photographer has distanced him- or herself from the experience. I know of people who no longer take cameras with them on hikes because of this effect.[93]

If beauty exists independently from human evaluations, a noninstrumental approach is the best possible way to experience it. If it does not exist in this fashion, then it seems to me that the farther we get from an evaluative frame of mind, the less apparent beauty should become—which is the opposite of what happens.

To be sure, there is a type of beauty based on personal desires; the differences between it and natural beauty are interesting. An example of beauty in this second sense is looking at a meal set before us when we are ravenously hungry and finding it beautiful. (We can also see intrinsic beauty in food, but this type of beauty is not fueled by appetite.) When we are satiated, particularly when oversatiated, food can not only cease being beautiful, it can become repugnant. This does not happen when experiencing natural beauty: it never becomes repugnant. (It is perhaps significant that the same distinction holds between lust and love.) What *can* happen is that other cares and concerns intrude, so that we no longer attend to natural beauty. We can come to take it for granted. But this is different from satiation. For one

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thing, we can agree that, ideally, it is best not to take natural beauty for granted. By contrast, we will also agree that it is good that we can become satiated with food, no matter how beautiful the spread. It seems to me that attempting to reduce the first experience of beauty into the same kind of utilitarian framework as the second is akin to the egoist arguing that any conceivable action is egoistic.

A more subtle skeptic will argue that if the viewer weren't there, neither would be the beauty. Thus, without human beings to appreciate it, nature has no beauty. I think this view is also mistaken, at least in the way it is usually intended. Obviously, if we had never perceived beauty in some thing, we would be unaware that it possessed such a quality. Of course our experience of beauty is tied to our perceptions, but this fact does not reduce the beauty we see to a quality of perception, rather than a perception of quality.

If beauty were simply a perception that is the product of evolution by natural selection, a sunset should probably not appear beautiful. Evolutionarily speaking, it would make sense that we be made *uneasy* by sunsets since, for countless millennia, we were more vulnerable to predators during the dark nights sunsets portend than during the day. Perceiving beauty may in some cases have survival value, as is usually the case with the perception of sexual beauty, but certainly that is not the case here.

When we experience beauty we had not noticed before, our normal reaction is to wonder why it took us so long to see it. Why had we been blind to it before? One thing we do *not* do is congratulate ourselves for bringing a new value into existence. Kohák notes that "beauty is no more in the eye of the beholder than the board feet of lumber. Both are there, waiting to be acknowledged—to be *seen*."[94] Moreover, as Rolston argues,

> We do not love wildflowers *for the pleasure they bring us*. They themselves *are* our pleasure; their flourishing is that in which we take pleasure. Our excellence of character comes as the wildflowers give us pleasure, but they are strong to do this because they have value in themselves, which we humans are sensitive enough to track onto with subjective experiences. If the excellence of character really comes from experiencing *otherness*, then why not attach *value* to this otherness? Why praise only the *virtue* in the beholder? How can it be an ideal of human excellence to treasure what is in itself something which has no value in itself? We seem incoherently to be trying to value for its own sake and for our sake what has no sake![95]

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The senses through which we perceive beauty developed through natural selection. Other beings, such as certain reptiles, have developed different senses, or similar senses that are sensitive to different ranges of light, sound, or odor. If beauty is more than merely subjective, it would probably not be dependent for its perception upon those senses that human beings happen to possess. One bit of evidence for this possibility is that beauty is a quality revealed by a certain type of awareness, an awareness that is not evaluative or manipulative in character. Such awareness does not in any obvious sense depend upon human intelligence, so it is not unreasonable to suggest that it exists outside the human sphere as well. Indeed, photographs of flowers as scientists think insects might perceive them reveal beautiful patterns invisible in the same flowers as viewed by unaided human eyes. This is a type of beauty that exists even when invisible to us.

Natural beauty is certainly not the only kind there is, but it plays a special role because it is divorced from the world of human artifacts. Of course we can look at human artifacts in the same way we do a sunset, but doing so is more difficult, since they tend to be either taken for granted or seen in at least partially instrumental terms.

Because nature is not a human artifact, contemplation of it leads to different insights than those derived from contemplating artificially created beauty. As the impact of humankind upon our world becomes greater, the importance of the first type of insights will grow. Our everyday perceptions of the world, which tend to denigrate our experience of nature, reflect a mechanistic worldview that grew out of the powerful theoretical vision of Newtonian physics—one that is no longer supported by physics and was never supported by direct experience. As Kohák observes, "it is a faithful reflection of the world of artifacts and as such compelling to a humanity whose experience of nature is restricted to contact with artifacts."[96] He adds that "having taught ourselves to conceive of our world as dead matter in meaningless motion, we experience solitude not as communion but as isolation amid lifeless, alien surroundings."[97] Nature at its most beautiful can break through this deadening of perception and of the heart. Once heart and perception are opened up, natural beauty presents itself ever more widely.

I have focused upon beauty not because it is the only natural value, but because it is perhaps the easiest one for twentieth-century moderns to grasp. If natural beauty exists, it calls for our respect as something of inherent worth. Its value may not override everything else, but neither is it without weight.

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Relationship

Central to deep ecology is a strong sense of the interconnectedness of things. As we have seen, natural beauty is most apparent to us when we are most open to experiencing nature on its own terms. The more we distance ourselves from an experience and assume a detached or instrumental approach to what we encounter, the less we can appreciate the beauty around us. It is significant that the same holds true for our sense of personhood. The more I take a detached or instrumental stance toward others, the less I am open to their interiority. My moral sense atrophies. If I still act ethically, it will be from either egoistic self-interest or the influence of socialization, not due to any respect I have for another as a fellow being. Acting solely from self-interest is purely manipulative. Socialization, when it does not lead to a deeper insight, simply results in our doing the "right thing," if indeed it is right, because that is "what is done." The sociopath is an extreme example of the triumph of instrumentalism.

Taking the stance of an impersonal observer can be useful for certain important purposes, but it also can distort our perception of the world. From such a detached perspective, it is easy for things to assume only an instrumental value derived wholly from their usefulness to our purposes. On their own terms they appear worthless. George Grant observes that "any beautiful thing can be made into an object. But if we confine our attention to anything as if it were simply an object, it cannot be loved as beautiful." He elaborates: "The key difficulty in receiving the beauty of the world these days is that such teaching is rooted in the act of looking at the world as it is, while the dominant science is rooted in the desire to change it."[98]

When our knowledge stems solely from our capacity to manipulate something, the object is extracted from its broader context of meaning. Knowledge is then based on some form of control, for within this framework, the less we can manipulate something, the less we can gain knowledge of it. Control is a form of domination. Kohák points out that

> Whatever I come to possess, to dominate, be it a tool, an animal, or a fellow human being, can no longer be a companion. It becomes alien. The world humans master, though they may claim to own it, does not become their own, belonging to them in the intimate sense in which a father belongs to a son or a husband to a wife. The possessed becomes a dead world in our hands, lifeless and meaningless.[99]

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To better appreciate what is at stake here, I return to Hayek's insight that "mind can exist only as part of another independently existing distinct structure or order, though that order persists and can develop only because millions of minds constantly absorb and modify parts of it."[100] Perhaps the words "distinct" and "independently" are misleading, for any given mind will influence this overall order, although usually imperceptibly. The English language is independent from any one of us, but exists only because we speak it. I can confront this structure as an independent thing even though I help constitute it. The order of which Hayek writes is not only social, it is also physical and environmental.

If mind arises out of the relationships constituting it, it seems to follow that individuality also arises out of these relationships, manifesting a unique configuration of awareness. For what is our individuality in the absence of mind? The odd thing about individuality is that while all of us manifest it, we cannot look within to find a "self" separate from the experiences which go to make it up, a self in which this individuality resides. As David Hume noted,

> When I enter most intimately into what I call *myself*, I always stumble on some peculiar perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch *myself* at any time without a perception, and can never observe anything but the perception. I may venture to affirm of the rest of mankind, that they are nothing but a bundle or collection of different perceptions, which succeed each other with inconceivable rapidity, and are in a perpetual flux and movement.[101]

We have a self, but cannot find it. It seems that the solution to this paradox is that an individual sense of self is a gestalt figure, composed of all the varied and changing relationships in which one participates. A gestalt is a whole from which the elements it encompasses derive meaning. It is more pattern than object—or rather, it is the pattern which defines the object. It is in this sense that the self is more than simply "a bundle or collection of different perceptions."

Arne Naess, who established deep ecology as a self-conscious philosophical perspective, has proposed one of the clearest ways for conceiving human experience in such a relational reality. Instead of thinking of the world as made up of matter, he suggests that we think of it as a "relational field." In such a world "there are no completely separable objects, therefore no separable ego or medium or organism. . . . Within such a field, any *concrete content* can only be related one-to-one to an indivisible structure, a *constellation* of factors."[102] Lived experience

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is integrated into a unity by its gestalt character. Similarly, Michael Polanyi points out that perceptual coherence is established by thousands of tacit operations of which we are unaware. "A successful integration of a thousand changing particulars into a single constant sight makes me recognize a real object in front of me."[103] Polanyi admits, of course, that we can attend to any one of these particulars, but contends that it, too, will become distinctly perceptible only tacitly. Focusing simply pushes the tacit dimension of perception back a step.

Naess's Polanyi-like argument appears to provide a broader framework for situating Hayek's description of mind. For example, when we spontaneously experience the world we experience countless relationships consisting of innumerable gestalts. Some gestalts can be experienced as wholes, such as being a "friend." But while being a friend constitutes a gestalt of its own, it also plays a part in the higher-order gestalt which is myself. Naess writes that spontaneous experience is a "vast hierarchy" of "lower and higher-order gestalts."[104]

Speaking for myself, I am a son, brother, friend, citizen, artist, writer, hiker, and so on. Each of these in its many forms constitutes a gestalt. All of them together help create the higher-order gestalt which is my self. As they change, so do I. At the same time, the unique gestalt that I am influences the various subordinate gestalts which constitute the I that I am. I term these gestalts rather than roles because, from this perspective, there is no "I" separate from them which can take them as roles. I can imagine what it is like to cease being a friend, but were I actually to do so I would be a different person. Nor could I imagine giving up all my subordinate gestalts. Collectively, they *are* me. Joanna Macy writes:

> The individual self . . . appears as a process, a pattern of psycho-physical events. Because it is formed through sensory, affective, and cognitive interaction with its environment, it cannot be abstracted from its context in nature and society. . . . To be a person, therefore, is to participate, at every level of our being, in a reality wider than that enclosed by our skin or identified with our name.[105]

Naess observes that *"Gestalts bind the I and the not-I together in a whole.* Joy becomes, not *my* joy, but *something joyful* of which I and something else are interdependent, non-isolatable fragments."[106] Macy helps us grasp this reasoning, observing that "as when we say 'it rains,' but do not mean something external to the rain is raining, so it is with our doing."[107]

Naess emphasizes that complex gestalts

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> are easily destroyed by attempts to analyse fragments of them consciously. . . . [For example] some people can distinguish between species of birds in flight at a great distance with great certainty even in dim light. Attempts to formulate precisely the telling characteristics (that is the individual components of the gestalt perception) prove to be futile, however, and can reduce one's ability to distinguish between species under difficult conditions.[108]

Perceiving natural beauty, be it a sunset or a field of flowers, is a gestalt perception.

Analytic thought breaks down gestalts, particularly complex ones. Attending to the particulars of which they are composed (which are themselves lower-order gestalts) breaks down our awareness of the relational whole they form. In the process we are severed from the world as spontaneously experienced. Thus, trying to perceive the world "objectively" is to perceive it in isolation from some of the relationships that make it what it is, such as my being situated within it and part of it. This is why Kohák argues that whatever I claim to possess and dominate becomes alien to me. In separating something from myself in order to possess it, I also detach it from its spontaneous relationship to me.

> The claim to possess cannot grow out of a lived experience: it is an abstract, legal claim, a construct established by social convention to order the life of a world of artifacts. . . . It may well be legitimate, as a formalization of lived experience. But the truth, the reality itself, is of a different order, the personal experience of a bond between a person and the land he tills, the worker and the familiar tool which is the companion of his labor, the person and his body. Those are not experiences of possession and domination, but of being at ease, at home with each other, of belonging together.[109]

Michael Polanyi's description of making a tool an extension of oneself in order to use it helps us understand Kohák's point. As soon as I begin attending to the hammer with which I am hammering nails, rather than simply hammering them, or to the feel of a probe in my hand, rather than feeling with the probe, I lose the capacity to use them effectively. With hammers in particular, this can be painfully evident. The more they become objects to me, the less I am at home in them. The less I am aware of them focally, the more I can make use of them.[110]

Scientific analysis provides access to one kind of knowledge, but it forecloses another. Scientific investigation, in order to gain knowledge of lower-order gestalts, deliberately ignores the higher-order experiential gestalt that makes us at home with a phenomenon. There is

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nothing wrong with this procedure. We are not purely contemplative creatures. We must make use of nature to survive, and science has radically increased our capacity to do so. It only creates problems when knowledge revealed by higher-order gestalts is devalued. We gain power but lose sight of the full context within which that power is wielded.[111]

Polanyi points out that scientific knowledge is as dependent upon gestalts and tacit knowing as is everyday experience.[112] But scientific gestalts are of a lower order. They reveal meaning, but do so in part by divorcing the scientist from the entirety of the perceived world. In the excitement of doing research, particularly successful research, it is easy to lose sight of what has been deliberately excluded. Yet the meaning revealed by science can be deep indeed. If scientific insights are reintegrated into our daily experience, rather than superseding or devaluing it, they can enrich it. The more the components of a gestalt include realized relationships, the richer it becomes.[113]

It takes a subtle mind to grasp that the object studied is not simply a thing deriving its value from the investigator's purpose. In writing of Nobel laureate Barbara McClintock, Evelyn Fox Keller observed that "over the years, a special kind of sympathetic understanding grew in McClintock, heightening her powers of discernment, until finally, the objects of her study have become subjects in their own right; they claim from her the kind of attention that most of us experience in relation to other persons." Albert Einstein wrote that "only intuition, resting on sympathetic understanding, can lead to [scientific laws] . . . the daily effort comes from no deliberate intention or program, but straight from the heart." Konrad Lorenz observed that "the fact that I was always convinced that I was related to animals played a role [in my scientific success]. I believe that an animal is a living being like myself, no better and no worse. . . . This fundamentally simple attitude toward man—toward nature—is perhaps the most important thing I learned during my childhood." These insights are in stark contrast to Malinowski's comment in his diary that "I see the life of the natives as utterly devoid of interest or importance, something as remote from me as the life of a dog."[114]

Modern science is one of the greatest achievements of humankind. But its very success and the detached attitudes it seems to encourage prevent it from becoming a complete system of knowledge about the world. Scientific method grew from the desire of scientists to find convincing demonstrations for their theories. Successful prediction and precise measurement are perhaps two of the most convincing

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strategies for winning assent.[115] But the more easily a phenomenon can be investigated by these methods, the more easily it can be controlled. Scientists tend to focus on those aspects of experience that are most accessible to these strategies. This has led to an unparalleled increase in our power to dominate nature—at the cost of our ability to be at home in it. Too often scientists forget that a strategy that developed as a means of impersonal demonstration to others does not necessarily serve to encompass the whole of the real world. Malinowski's sociopathic attitude is unfortunately not an isolated example. Kohák observes that the conventional paradigm of scientific knowledge has "no place for a moral subject, simply because that construct was not designed to deal with him."[116]

Poets, painters, and other artists have often claimed to illuminate aspects of reality left untouched by attempts to understand it "objectively." One implication of Naess's argument is that they are right. Art can reach us in ways science cannot. Contrast a scientific description of a rainbow to a painting of one.[117]

Deep ecologists have continually bumped up against the problem of describing their position in the language of traditional analytic philosophy. This is because such language is used differently than language in everyday experience. Kohák observes that "in human communication, the purpose of words is not to contain experiences, but to point to them and to evoke them."[118] There is nothing wrong with the analytic approach until we try to rely on such language, divorced from experience, to describe insights that can only be revealed by that experience. Bill Devall notes that

> poetic language resonates, evokes, expresses. And I think deep ecology is best expressed, not explained. Poetic words come alive with imagery and metaphor. Metaphors, especially, allow the listener to make connections which may be difficult to express in precise, analytical words.[119]

Read superficially, Devall's argument can seem irrationalist. But Devall's point is that when addressing who we are and what it is to live within the world, any mode of discourse that closes itself off to poetic communiction will *necessarily* be inadequate to its task. By the same token, closing oneself off to scientific knowledge will *also* be inadequate. It may not be easy to keep both in mind, but who said that understanding the world was easy?[120] Deep ecology is not antiscientific, but it does point to limits in the kind of knowledge accessible within the dominant objectivistic self-understanding of science.

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Rediscovering Our World as Home

If these arguments are sound, the Western Promethean ideal is based upon a perceptual confusion. While making sense within its own confines, it attends only to a part of the world, losing sight of the larger context in which human power and creativity exist. To be sure, this partial vision has led to great goods, including not only science but material prosperity. But attempts to universalize its assumptions have carried increasingly high costs as our power to affect the world has grown. Inasmuch as we are inextricably connected to everything else, scientific knowledge, in the very act of expanding our understanding of reality in one respect, tends to carry us away from reality in another sense. The farther down the Promethean road we travel, the more estranged we become from the things that make any road worth traveling.

As our power to affect the world expands, and we become infatuated with it, our capacity to comprehend power and world alike is distorted. Techniques of power tend to instrumentalize our relationships into "resources" whose noninstrumental relationships to us are obscured. In such a world we can *never* have the wisdom to assume what Bookchin calls "conscious control" over our material existence. Power requires wisdom to be exercised well. But wisdom requires being aware of the appropriate limits of our desires and appropriate ways of relating with other beings. Modern styles of thought increase our power, but tend to make us impervious to wisdom. We cannot avoid error, and as our power grows the seriousness of potential errors grows with it.[121] Fortunately, we possess a modicum of cleverness—defined as the capacity to extricate ourselves from situations in which the wise would never have found themselves. But are we wise enough not to rely continually on our cleverness? If not, cleverness becomes stupidity.

We now have a different but complementary reason to that given by Bartley for abandoning the Promethean ideal. Not only in a strict sense do we never know fully what we are talking about or the implications of what we are doing; in addition, expanding our power to act within the world while losing sight of it as a place of intrinsic value worthy of respect on its own terms increases our estrangement from it. Ironically, the greater our powers have become, the poorer becomes our vision in using them. This is not inevitable. But to avoid this outcome we need to situate our capacity to subject the world to our

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desires within a deeper context of relationships—a context which thereby makes our desires less central.

When confronting awesome beauty, for instance, our sense of self becomes situated in a wider context than usual. Our needs cease to preoccupy us and, for a time, we are relieved from subjection to them. In principle such insight can be found anywhere. In practice, wild nature makes such insight easily accessible to all but the most closed minds and hearts.

This experience is common to European, Asian, African, Australian, and American culture. Native American philosopher Jay Vest, in investigating the etymological origins of the word "wilderness" in pre-Christian northern Europe, concluded that

> wilderness . . . means "self-willed-land" or "self-willed-place" with the emphasis upon its own intrinsic volition. . . . While control, order, domination and management are true of civilization and domestication, they are not essentials of primal culture. The primal peoples of northern Europe were not bent upon dominating and controlling all environments. Thus, their "will-of-the-land" conception—wilderness—demonstrates a recognition of land in and for itself. . . .
>
> Nature worship among primal Indo-Europeans evidences a traditional theme of sacred natural places, free from desecration by humans and their technology. Such sacred places were wilderness in the deepest sense: they were imbued with *will-force*—willed, willful, uncontrollable—and with spirit. Thus, they held about them a sacred mystery—a numinous presence. It is from this tradition that the "will-of-the-land"—wilderness—concept emerges.[122]

Deep ecology points toward a reenchantment of daily life, not in abstract theory, as Bookchin attempts, but in experience available to us all. It opens up a way of relating to other things with *respect* by denying that any thing is purely an object.

The ethic associated with deep ecology is often called biocentric or ecocentric in contrast to our usual anthropocentric view of ethics. A common, but silly, criticism of such an ethic is that since human beings advocate ecocentric ethics, and no other beings advocate ethics at all, such ethics are in fact anthropocentric. This is like saying that since white males developed quantum mechanics, quantum mechanics is white male physics. Warwick Fox points out that the criticism fails to "distinguish between the weak, trivial, tautological sense of anthropocentrism and the strong, informative, substantive sense of the term. Such a criticism is weak in that it does not allow us to make any

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distinctions between statements . . . trivial in that it simply states the obvious; and tautological in that it is true by definition."[123]

Another complaint against biocentrism heard across the traditional spectrum, from Bookchin to *Reason*, is that a nonanthropocentric ethic undermines our ethical relationships with other human beings. In fact, it leaves them largely untouched. What change there is comes from situating interhuman ethics within a larger context. Nonanthropocentric ethics rooted in respect are community-specific.[124] The types of relationships we have within communities determine the ethical obligations we have within them. The ethical obligations entailed by a community of political and juridical equals are different from those required for the ecological community. But both, and indeed all other ethics embedded within community relations, involve respect for fellow members. No one is properly *simply* a resource to another.

Callicott notes that "as a general rule, the duties correlative to the inner social circles to which we belong eclipse those correlative to the rings farther from the heartland when conflicts arise." For example, my obligations to my family are usually more demanding than those to my country. However, obligations to the outer circles, as Callicott puts it, can "demand choices which affect, in turn, the demands of the more interior social-ethical circles."[125] I have an obligation to feed my children, but in all or virtually all cases this does not override my obligation not to steal from strangers, even though in general my obligations to my children far outweigh those to strangers. A similar situation exists with our relations to the natural world. My need to feed my children does not as a rule override my obligation not to cause the extinction of benign forms of life; when these obligations conflict, I am obligated to change my means of subsistence, no matter how personally inconvenient this may be. In part IV I shall develop these implications in more detail.

Deep ecology opens us to the insights that we are members of communities that encompass more than human beings, and that appropriate action in *any* community is never fully instrumental. Recognizing these insights no more hobbles human creativity than does the prohibition against being allowed to shoot my neighbors hobble my freedom. In both cases I am free to act however I wish, so long as I do not violate the respect-based rules that frame the communities of which I am a part.

Deep ecological thinkers, then, argue that Bookchin's enterprise, as an instance of the Promethean project, is flawed from the start. Social ecology is neither truly social nor truly ecological. Nor is it viable.

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Ecologically speaking, Murray Bookchin is not part of the solution, he is part of the problem. Prometheus needs to make peace with the gods.

IV. DEEP ECOLOGY AND LIBERALISM

How does deep ecology relate to my earlier neoliberal critique of social ecology? Complexly. The implications of deep ecology for liberal *institutions* are not so critical as some of its advocates might think. In terms of the liberal *understanding* of these institutions, however, the implications are very critical indeed. In abandoning the Promethean ideal we abandon the idolatry of power, technique, and competition which has characterized most liberal thinking.

Liberals idolize power by uncritically advocating expanded personal control over resources—with the nonhuman world considered simply as a source of those resources. (The liberal concern with the misuse of power has been confined solely to the human world.) Liberals idolize technique by uncritically accepting ever more sophisticated refinements of power made possible by the one-sided development of instrumental reason. They idolize competition by uncritically praising it without attending either to its costs or to the role cooperation plays in successful democratic and market orders.

Even at the narrowly social level, abandoning these idolatries is overdue. For example, the one-sided attention paid to competition by most economists and their detractors alike has had an unquantifiable but, I suspect, very detrimental impact on liberal society. Creators of new organizational forms in such societies should be considered entrepreneurs as much as are creators of new products, but they are not. Failure to count new forms of cooperative organization as well as new products among the outcomes of entrepreneurial discovery can only retard the pursuit of such discoveries. It is fortunate that the creator of the Mondragon cooperatives was a parish priest, not an economist—were it otherwise, he would have learned that cooperatives were "inefficient," and so would not have established them.

Attention to the natural communities within which human communities exist situates them more deeply and broadly within an ethical framework. We are called upon to become fellow members of the community of life, rather than its lords and masters. The perception of loss this entails grows from ignorance, for in losing our dreams of domination we find, at last, a home.

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Liberalism and the Environment

Self-organizing social systems are as effective as they are because they make it easier for people to cooperate. They do this by simplifying social relations through the separation of means and ends. This simplification can result in an increasing standardization and homogenization of human relationships—not in all areas of life, as Bookchin claims, but in many, including science, the market, and liberal democracy.[126]

I have discussed how the successes of science stem in large part from relying upon a few simple and powerful techniques for winning agreement at the cost of ignoring elements of experience not easily amenable to such approaches. A similar simplification occurs in democracy. Voting ignores differences in the qualities of voters' judgments. The fool's vote counts as much as that of the sage. (If only we could gain agreement as to which is which!) Democratic procedures are not concerned with the merit of any particular proposal. They simply provide a framework wherein citizens can advocate any measures they wish, be they wise or foolish. As with science, issues are decided as the outcome of a process over which no one exercises control or, in the strict sense, responsibility.

In the market, the "cash nexus" and rules of contract reduce the need for agreement to an absolute minimum. All any person need be concerned with is whether or not s/he expects to be better off after an exchange than if it did not take place. No concern for or sympathy with the other party is necessary. While the market's self-organizing process is based on agreement, the minimal agreement necessary is purely procedural and instrumental.

Each of these systems leads to enormous social gains. But there are costs as well. The frequent denial of such costs by advocates of these systems makes any effective accounting of them ideologically charged. I have already discussed the costs associated with a purely objectivist or reductionist scientific model of reality. Let me deal now with the costs of the market.

Hayek, Mises, and others have argued that it is the market's very impersonality that makes it possible for people who differ in many respects to cooperate nevertheless. No one can be aware of the overall impact of his or her actions in a market. If we did know the ultimate outcome of our actions, cooperation would be more difficult because we would have to agree not only on procedures but on their outcomes.

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Another aspect of the market's impersonality is that remarkably little bargaining takes place, at least for goods of mass production and consumption. Prices are regarded either as acceptable or too high, in which case the commodity or service finds no buyer.

Moreover, economic production is largely for those we do not know. In most cases we work for companies whose owners are strangers to us, and who often as not are themselves shareholders who have never seen the physical plant they own. Impersonal movements of prices for stocks, labor, raw materials, and the like govern a large proportion of market transactions. Successful entrepreneurship, whether analyzed from an Austrian-school or Schumpeterian perspective, need require little personal knowledge of consumers or producers.[127] Even more as consumers than as workers, such an impersonal environment affords us little knowledge of those who will ultimately be affected by our decisions. Other than the friends and family for whom we may buy goods and services, the well-being of few people is much affected by the decisions of any single person. (Hiring and firing decisions are different, but are not uniquely market phenomena.) We have little to go on in such an environment other than our private needs, desires, and wishes.

For instance, we know little of what was involved in getting a particular product to market when we consider whether or not to purchase it. It is one thing for me to buy from you and not care what you do with the money I pay you. This is how the market simplifies cooperation. But I also may be unaware that you did certain things in getting the product to market which I find deeply repugnant. Until recently, tuna fishing for the American market entailed the mass killing of dolphins. Until the efforts of environmental activists who publicized the killing, consumers did not know that such horrendous methods were used. They bought their tuna blissfully unaware of the non-monetary costs of production. Dolphin-safe tuna is ever so slightly more expensive. Given a *clear* choice, many Americans proved willing to pay a few cents more for it. But such choices are rarely clear. The very complexity of the division of labor makes such knowledge hard to discover and hard to disseminate.

It is significant that only with the rise of computerized mailing lists and the like has it become relatively easy for people seeking to pursue nonfinancial values to organize together if they were not already close geographically. The fact that "public interest" organizations grew so fast once organizing costs became manageable suggests that a deep

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need for promoting noninstrumental values was being frustrated until relatively recently.

The market's impersonal character is what has allowed economics, more than any other social science, to claim to have discovered laws with predictive power. Human beings themselves are not particularly predictable, and the less we know about an individual, the less predictable s/he becomes. But the market process *abstracts away our humanness.* It requires us to know nothing specific about individuals. (This is why economic man has seemed such a fruitful simplification.) And unlike science and democracy, it operates largely through quantified relationships, making prediction even easier. But while independent of human character, market processes are not neutral in their impact upon that character. Hayek has termed the market a school for rationality.[128] If by rationality we mean *instrumental* rationality, his point is profoundly correct. The market has greatly expanded our capacity to find and develop the resources needed to satisfy our needs, wishes, and desires. But in the process, it has altered those desires by disproportionately rewarding actions that treat nature as if it lacked intrinsic value.

The instrumental type of reasoning thereby encouraged has the same impact upon our perceptions of the world as does objectivistic scientific analysis. As Naess points out, it tends to narrow our awareness to purely instrumental relationships. Everything becomes an object. Something is a resource, generally, only when its utility depends upon its being *changed.* This is so partially because we know little about most of those influenced by our actions, and so *cannot* take a deeper view. In addition, however, the market process itself generously rewards those most able to think in purely instrumental terms.

For example, the corporation, the market's most characteristic business organization, is far from neutral with regard to values. To the extent that the impersonality of the market process forces managers to be responsive to shareholders' interests, it also forces those managers to act solely to maximize money profit. Yet money profit is only a component of the total "psychic profit" valued by most people. As a shareholder I want to provide for my material needs, but it is unlikely that I am only concerned with such needs. Nevertheless, by purchasing stock I strengthen processes which may well sacrifice other values I hold dear in order to maximize profit. To be sure, as a private person I can participate in "green" investment funds, but institutional investors such as pension funds cannot. Their managers would justly be accused of acting inconsistently with their fiduciary responsibilities.

The market as it has developed does not make noninstrumental

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action impossible, as the success of the Nature Conservancy demonstrates. But the market does load the dice in favor of expanding the scope of what is valued solely as means to our ends. To put the point differently, I can choose to pursue values other than money profit maximization by participating in the market, but by doing so I will probably gain access to fewer resources than someone of equal talents who pursues profits alone. He or she will take advantage of some financial opportunities that I willingly forgo—much like a bank robber will take advantage of opportunities we would both reject.

Success as defined by the market and success as defined by individuals are not the same thing. Success as defined by the market means that as a result of exchanges, a person controls more resources than before, and is therefore better able to engage in market exchanges than before. But an individual might choose a lower income in order to better pursue nonmonetary goods and, as a result, be less able to engage in market exchanges.

The market is generally treated by its advocates as a basically neutral means for facilitating voluntary exchanges. For example, James Buchanan and Viktor Vanberg write that

> the market economy, as an aggregation, neither maximizes nor minimizes anything. It simply allows each participant to maximize that which he or she values, subject to the preferences and endowments of others. The results of market processes cannot be evaluated against some independently-defined scalar.[129]

But they can, in fact, be evaluated against the scale of values that would obtain in the absence of its incentives. This evaluation suggests that it is anything but value-neutral.

If the market were truly a neutral means for realizing human goods, the expansion of instrumental rationality would be a complete gain. But it is not. The spread of market relations means an undervaluing of the noninstrumental qualities of things which can *also* be put to instrumental use. Failure to appreciate this point is the fundamental weakness in free-market environmentalists' suggestions that privatizating the environment would not weaken environmental values.[130]

We have seen that a viable market order is fundamental to any society capable of providing material prosperity for very many people. Any social theory that does not allow for a market is intrinsically incapable of addressing most people's needs. For this reason, neoliberal social theory appears to offer a more promising foundation than social ecology and other forms of left environmentalism for integrat-

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ing humankind with its environment, in part because it is consistent with the self-organizing principles underlying both ecosystems and market systems. But is liberalism at heart anti-environmental, because the market mentality is unable to grasp intrinsic values that are divorced from usefulness for human purposes? It is to this question that we now turn.

Two Schools of Liberalism

At the risk of oversimplifying, liberal social theorists tend to fall into one of two disproportionately influential schools: those conceiving of the individual as in some sense the irreducible social unit, and those admitting that individuals are social products, even though society itself is the result of individual volition and creativity. The first variant of liberalism has been intellectually and politically dominant. Its precursors include thinkers as diverse as Descartes, Hobbes, Locke, Destutt de Tracy, Bentham, and the Mills. All modes of liberal thought that utilize rational self-interest, natural rights, or utilitarianism as foundations for their social theory tend to fall within this tradition.[131] Today it includes theorists as diverse as Robert Dahl, John Rawls, Murray Rothbard, and the Robert Nozick of *Anarchy, State, and Utopia* (but not of *The Examined Life*). Thus this tradition includes constructivist liberals such as Dahl as well as those making legalistic, individualistic, or egoistic criticisms of constructivism. All are essentially Promethean.

The second liberal tradition is quite different. Its perspective is an evolutionary one, conceiving society and social institutions as the largely unintended outcomes of practices that are rarely consciously chosen by the people employing them. Among its early exponents were David Hume, Adam Smith, and Adam Ferguson. Its chief contemporary proponent was Hayek. Other contemporary scholars associated with this perspective include Peter Berger and Thomas Luckmann.[132]

While both schools of liberalism value (with varying degrees of consistency) societies ordered by procedural rather than end-specific rules, some considerable degree of market autonomy, and equalitarian legal standards, their differences are as important as their similarities. The first school I term "individualist" not because all its advocates are political individualists, but because their fundamental unit of analysis is the individual. In this sense, even Robert Dahl's egalitarian utilitari-

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anism is individualistic. Individualist liberal thought has often (although not always) consciously modeled itself upon Newtonian physics and has been strongly influenced by the ideals of the exact sciences and mathematics.

I term the second tradition "evolutionary" because of its focus on self-organizing processes as being more fundamental to social phenomena than the objects thereby ordered. Evolutionary liberalism has had a long and reciprocal relationship with the precursors of ecological science, particularly evolutionary theory. The common intellectual insight which unites evolutionary liberalism with evolutionary theory is that ordered relations can arise, without anyone deliberately devising that order, through the process of self-organization. This insight has yet to be absorbed by our society, intellectually or operationally.

Evolutionary liberal models of social life have generally taken a back seat to the more individualistic liberal tradition. I believe this is because the evolutionary approach did not promise the precision of measurement and the hope for certainty and control that has for so long captivated many social scientists, especially those fantasizing their future as "social engineers." Even individualist perspectives that were anticonstructivist promised clear, exact, and neatly deductive approaches to the good society, leaving little room for the unknown or uncertain. Locke's *Second Treatise* is the most famous early example, and Hume's critique of it is one of the clearest early examples of the evolutionary perspective. Among contemporary anticonstructivists, Mises and Rothbard's praxeological approach shares the ideal of certainty with the sophistries of contemporary market defenses based on "economic man." This ultimately spurious hope for precision may explain why both the constructivist and anticonstructivist wings of individualist liberalism have appealed to ideologues. Evolutionary liberalism is, by comparison, much less appealing to those craving certainty, for it offers little of it.

Evolutionary liberalism makes no claim to predict particular future events. At best it can make what Hayek calls abstract "pattern predictions" of the probable results of proposed changes.[133] Neither does it offer a rigorous intellectual system by which every issue can be settled. At best, it offers what we might term strong rules of thumb. Unlike individualist liberalism, evolutionary liberalism necessarily inculcates a degree of humility and respect when confronting social institutions. It seeks to *cultivate* the conditions for desirable change rather than to plan, manage, direct, or control such change—either by engineering it or by subjecting action to absolute standards of individual rights. It is

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not by chance that "cultivate" is an agricultural concept whereas the other terms are technological. This shift of metaphor points to the fundamental gulf separating the two types of liberalism.

Evelyn Fox Keller describes two ways of conceiving science which point to the same kind of dichotomy that is evident in liberal theory. She distinguishes between a science that focuses on law and a science that focuses on order. The latter conception, she argues, is more adequate to its subject.

> An interest in order rather than law could imply far-reaching changes in our conception of science. Most directly, it would imply a shift in the focus of scientific inquiry . . . to an interest in the multiple and varied kinds of order actually expressed in nature. The former focus has historically described physics better than biology; a focus on order might look more to the biological sciences than to physics for its model. And within both . . . priorities might be expected to shift away from hierarchical models of simple, relatively static systems toward more global and interactive models of complex dynamic systems. . . .
>
> The conception of nature as orderly, and not merely law bound, allows nature itself to be generative and resourceful—more complex and abundant than we can either describe or prescribe. In this alternative view, nature comes to be seen as an active partner in a more reciprocal relation to an observer, equally active, but neither omniscient nor omnipotent. Such a relationship between mind and nature would require a different style of inquiry, no less rigorous but presupposing the modesty and open attentiveness that allow one to "listen to the material" . . . rather than assuming that scientific data self-evidently "speak for themselves. . . .
>
> It suggests a science premised on respect rather than domination, neither impotent nor coercive but, as knowledge always is, inevitably empowering.[134]

Environmental insights are fundamentally antithetical to individualist liberalism. At its best, individualist liberalism can offer good market-based means for cleaning up pollution and preserving resources which can bring in an adequate profit. Terry Anderson and Donald Leal's work is an example. I by no means disparage such work; it is badly needed. But it *cannot* incorporate an appreciation for creatures that have no instrumental value for, and cannot be morally equated with, human beings, such as furbish louseworts, spotted owls, and snail darters. Nor can it deal with the noninstrumental values of those things that also possess instrumental value, such as cattle and redwoods.

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Even evolutionary liberalism, despite its more modest assessment of individual capacities than either individualist liberalism or leftist utopianism, has tended to treat human beings in isolation from their natural environment, although not from their social one. However, because the fundamental insights of evolutionary liberalism and ecology are based on self-organizing processes, they at least dwell within a similar conceptual universe. Their root concepts are the same; they share a common language. Further, it is no great shift to expand the network of relationships that create and sustain individuals to include the natural as well as social worlds.

At bottom, deep ecology challenges only the anthropocentrism of evolutionary liberalism. The ultimate result of this challenge is enrichment rather than negation. Deep ecology provides a broader (and deeper) context within which to locate the insights of evolutionary liberalism. I want now to look briefly at some of the alterations the deep ecological perspective I described above suggests for neoliberal social theory and practice.

The market alone cannot provide a good society for the same reason that traditional science cannot by itself give us an adequate grasp of the world in which we live. Both the market and science are essential, but because their strengths are so intimately connected to their weaknesses, they are, even in combination, inadequate to sustain a good life for most people. And those who do live a good life will tend to be at somewhat of a disadvantage in purely market-oriented transactions.

The market process, like the ecological one, is self-organizing, mixing competitive and cooperative actions. In both cases, order arises out of the structure of rules which channel the actions of their members. The unifying principles underlying liberal self-organizing institutions are procedural equality among human beings and formal consent. In market orders these principles are manifested in the rules for exchanging property rights. It is to the concept of property rights that we must turn if the market order is to be harmonized with the environment that sustains it.

Let us begin with land. Nowhere do liberal justifications for property rights appear more arbitrary than in this case. The historic origins of existing patterns of land ownership are not very compelling. Virtually all land has been violently seized within the past few hundred years, and usually many times before. Even in market terms, the value of land has less to do with the contributions of its "owners" than with patterns of demand largely uninfluenced by those actions.

None of this justifies state "ownership" of land, which is often even

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more harmful and arbitrary, as the socialist world demonstrated. It suggests instead that something is wrong with the entire *concept* of ownership. An example may help explain why.

At the close of the 1980s the Elkins Prairie, an 80-acre parcel near Lawrence, Kansas, was the largest tall-grass virgin prairie in the area. In the United States, tall-grass virgin prairie is one of the rarest ecosystems, for nearly all of it has been turned into farmland. The Elkins Prairie was home to two federally protected species: Mead's milkweed and the western prairie fringed orchid. It was also a center of controversy, for while some were working to buy the land and have it preserved as an example of how the area looked before European settlement, others had different plans.

One Saturday night in late November 1990, the Prairie's owners ploughed 30 acres, gave the county one day to buy the land, and threatened to plough the rest if it did not. The county government met in emergency session and agreed to buy, only to have new terms imposed by the owners. When the county balked at the escalating terms the owners ploughed the rest, destroying it. They thereby eliminated any environmental obstacles to more "productive" use of the land.[135]

Deliberate destruction of this rare natural community occurred solely to improve the owners' financial position. They showed no sense of responsibility to anything but their pocketbooks. While not all landowners act in this fashion, those who act more responsibly do so *for moral reasons external to the concept of ownership.* Intrinsic values in Naess's sense can be destroyed solely to serve instrumental ones without overstepping a landowner's right to do whatever s/he wants with his or her property. This right is in a real sense despotic. It is a grant of a domain of absolute power that may subject not only human artifacts but animals, land, air, and water to arbitrary whim.

Scientists cannot produce even a spoonful of topsoil from its elemental components. Other beings, the land, soil, water, and air are essential constituents of our environment. When determining the proper human relationship to the natural world, the model of despot must be replaced with at least that of respectful steward. Because it is a moral relationship situated within a network of relations possessing intrinsic value, stewardship better describes our proper relationship to land than ownership. Some deep ecological thinkers distrust the stewardship model because, as Bill Devall and George Sessions argue, "it still incorporates the premise of instrumental rationality . . . of natural resources primarily for human use, and fails to distinguish vital human

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needs from mere desires.[136] But all embodied beings have needs, and to that degree act instrumentally. The problem is that the concept of absolute ownership discourages us from recognizing the intrinsic value of what we must *sometimes* make instrumental to our desires.

Stewardship requires that responsibility and obligation accompany power. The natural world unavoidably serves human needs and desires, but human beings owe consideration to it as well. Stewardship means, at a minimum, that the thing over which it is exercised should not be left worse off, in the sense that its basic role within the environment should not be seriously compromised. N. Scott Momaday eloquently captured this insight when he wrote, "You say that I use the land, and I reply, yes it is true; but it is not the first truth. The first truth is that I love the land; I see that it is beautiful. I delight in it; I am alive in it."[137]

Market-oriented approaches to solving environmental problems have focused on expanding the role of property rights in the air, underground water, rivers, the sea, animals, and threatened lands. By facilitating instrumental market exchanges, free-market environmentalists expect more efficient use to be made of these "resources." But they do not question the basic assumption that ownership should be despotic. Consequently, their proposals leave no room for aspects of nature that are not purely instrumental to human desires.

Property rights have always been subordinated to ethical limitations on our despotic control over "property." Had efficiency criteria provided the sole basis for determining the nature and extent of property rights, cruelty to animals and even slavery might still be allowed. Even within the market order as it presently exists, restrictive covenants and land trusts are increasingly used by present owners to restrict the capacity of future owners to exercise despotic control. These measures have been developed in large part to protect noninstrumental values which traditional property rights could not safeguard.[138] While limiting the power of owners, they no more undermine the market order than did legislation abolishing slavery or protecting some animals. But because the market as it exists is not a neutral ground for exchange, reliance upon such mechanisms *alone* is not likely to harmonize liberal society with deep ecological insights.

It seems to me that the solution to our problem can be drawn from the work of Hayek, who points out that preserving a self-organizing market requires us to act in ways that often go directly against short-run expediency. Often it seems as if a short-term economic problem can be solved by setting aside the rules generating the market order.

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For example, the Rural Electrification Administration subsidized electrical power delivery beginning in the 1930s. Obviously this was a good thing for the farmers who gained access to electricity. Much of the harm was and continues to be invisible. Even in narrowly economic terms, the REA virtually wiped out research in small-scale solar, wind, hydroelectric, and alcohol-based power generators. With traditional power sources artificially subsidized, research in alternatives was killed for 45 years.[139] The losses in undiscovered possibilities caused by these subsidies can never be determined. It is *logically* possible that, on balance, the intervention may have achieved more good than harm. But Hayek argues that in general, the market more successfully coordinates human plans than can any intervention.

In any given instance, the expected gains from overriding the rules generating a market may well appear to be greater than the usually unknown disruptions such actions will cause. Consequently, the principles generating a market order must always trump political pressure to override them if the order is to continue. Principle should override expediency.[140] *Exactly the same argument can be applied to our relationship with the natural world, for exactly the same reasons.*

The deep ecological principle that should not be compromised is that property rights should reflect not just efficiency in meeting human desires, but also the value of the nonhuman world. The first corollary of this principle is that there can be no right to create toxic wastes or nonbiodegradable products, so that the costs of neutralizing toxins and recycling should be incorporated into the costs of consumption. Not doing so subsidizes the production of harmful substances, ensuring that someone else will pay the price of their manufacture. The byproducts of all nonhuman forms of life are ultimately recycled in a nonharmful form that helps perpetuate life as a whole. Already the human failure to observe this principle has led to serious problems with groundwater pollution and the like. By not incorporating environmental costs in the cost of consumption, we also perpetuate the conceit that somehow we are privileged actors, separate from the rest of the world and not bound by the same principles that govern all life.To say that remedying these problems will be expensive should carry no more moral weight than the complaint that a slave owner cannot "afford" to free his slaves.

The second corollary of deep ecological principles is that the utilization of a renewable resource should maintain the fertility required for its indefinite renewal. The reasoning behind this rule should be obvious, even to economists. The "long run" always arrives. More impor-

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tantly, the principle of stewardship requires it, regardless of how inconvenient we find the changes it will require in current logging, fishing, and agricultural practices.

A third corollary is that while putting resources to human use, we must maintain a diversity of flora and fauna. There can be no right to cause extinction, with the possible exception of organisms generally lethal to human life, such as smallpox. Certainly there can be no right to destroy forever any form of benign life in the pursuit of a goal not absolutely essential to human survival. Such an action is an assault not only upon the beings destroyed, but upon all future generations of human beings. We should be reminded of Hayek's standard for public policy: that it "aim at increasing, for any person picked out at random, the prospects that the overall effect of all changes required by that order will increase his chances of attaining his ends."[141] As ecologies deal with species rather than individuals, the needed modification here is only that each species should generally have its opportunity to flourish relatively unhindered by human activities.

Again, even in terms of narrow human self-interest, we do not possess the knowledge (or the wisdom) to decide whether to extinguish a form of life forever. John Briggs and F. David Peat point out that experiments have suggested that the more complex environments with the greatest complexity of interactions among varieties of organisms are also the most stable. "One implication is that if complexity among autopoietic [self-organizing] structures can lead to stability, then in saving other species from our greedy meddling, we might in fact be saving ourselves."[142]

A balanced perception of the world and our place in it entails Aldo Leopold's land ethic: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."[143] Leopold's land ethic stands in the same relation to ecology as does a firm legal framework to a market order. Each is an application of the same insight. The deep ecological perspective, then, is not antagonistic to evolutionary liberalism in the tradition of Hume and Hayek. It only relativizes this perspective by placing evolutionary liberal insights within a larger and deeper context.

Human communities are nested within and dependent upon the ecological community. In each community life goes much better, and more appropriately, when community members operate by the set of rules which constitutes that community. Among human communities, the most inclusive are those ordered by self-organizing principles. They are open to all who are willing to abide by the rules which

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generate them: these rules are procedural, limiting how we try to attain our ends, but not what those ends might be. Within the wider human community are others, predicated upon different but not antagonistic rules. The family and smaller political communities are examples.

Our obligations to the many communities to which we belong will always be great, while our obligations to individual members of those communities will vary according to how intimate the relationship to them is. Thus, while we have a general obligation to humanity, our obligations are greatest to our families and close friends. Obligations to members of our political communities are weaker, but far from nonexistent. (Nor do family obligations always override them, as we have seen.) Our obligations to individual members of our ecological community are even weaker, but our obligation to preserve and assist the ecological community as a whole remains as strong as our responsibilities to the other self-organizing orders in which we live: family, polity, and humanity.

Sometimes our responsibilities to different communities conflict, particularly in the short run. We cannot reduce such conflicts to simple sets of priorities. No community consistently trumps all others, for each community helps us and our loved ones to be the beings that we are. But each community carries obligations stronger than our simple personal preferences.

Far from being hostile to ecological insights, the understanding of self-organizing institutions pioneered by liberalism marks the discovery of the first ecologically harmonious social processes since the demise of hunting and gathering societies.[144] But the potential of liberal thought in this regard has only begun to be explored.

NOTES

1. The conservative and libertarian norm is reflected in the hysterical April 1990 edition of *Reason*, whose lead article, written by its editor Virginia Postrel, pictures Lenin surrounded by various animals. Much of what follows is no better. See also, in a similar vein, Joel Schwarz, "The Rights of Nature and the Death of God," *Public Interest* no. 97 (Fall 1989). Schwarz has been ably rebutted in Hwa Yol Jung's "Shallow Thinking on Deep Ecology," *Trumpeter* 7, no. 2 (Spring 1990). There have been a few honorable exceptions to this nonsense, particularly the work of John Baden, Richard Stroup, Terry L. Anderson, Donald R. Leal, and Jane Shaw. The lead article "Everything You Know About the Environment Is Wrong"

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by Gregg Easterbrook, and "The Call of the Wild" by Evan Eisenberg in *The New Republic*, April 30, 1990, are well worth examining. See also the interesting August 1990 issue of *Chronicles*, which attempts to develop a conservative pro-environmentalist perspective. Also of interest is William K. Reilly's "The Green Thumb of Capitalism" in *Policy Review* (Fall 1990). A dissertation waiting to be written will analyze the responses of traditional ideologies to a new set of issues none had expected to become important.

2. Lewis Herber (Bookchin's then pen name), *Our Synthetic Environment* (New York: Alfred A. Knopf, 1962).
3. Murray Bookchin, "Recovering Evolution: A Reply to Eckersley and Fox," *Environmental Ethics* 12, no. 2 (Fall 1990): 253.
4. For example, see Brian Tokar, *The Green Alternative* (San Pedro, Calif.: R&E Miles, 1987); and John Clark, ed., *Renewing the Earth: The Promise of Social Ecology* (London: Merlin Press, 1990). Roderick Nash appears also to have been influenced by Bookchin. See *The Rights of Nature: A History of Environmental Ethics* (Madison: University of Wisconsin Press, 1989), esp. 164–5. However, in vituperation and nastiness to those he opposes, Bookchin is in a class of his own. Too often one of the hardest things to do when reading him is wading through his invective toward his adversaries, particularly in most books with the "Black Rose" imprint. Caveat emptor.
5. Murray Bookchin, *The Ecology of Freedom* (Palo Alto: Cheshire Books,1982).
6. Murray Bookchin, *The Modern Crisis*, 2nd rev. ed. (Montreal: Black Rose Books, 1987), 21; see also *The Ecology of Freedom,* 81–85.
7. Murray Bookchin, *Post-Scarcity Anarchism,* 2nd ed. (Montreal: Black Rose Books, 1986), 166.
8. Bookchin, *The Ecology of Freedom,* 80.
9. Ibid., 63.
10. Bookchin, *The Modern Crisis*, 22.
11. Bookchin, *The Ecology of Freedom*, 50.
12. Ibid., 50.
13. Ibid., 144.
14. Ibid., 149.
15. Ibid., 68.
16. Ibid., 135.
17. Bookchin, *Post-Scarcity Anarchism*, 166.
18. Ibid., 166.
19. Bookchin, *The Ecology of Freedom*, 137–8.
20. Bookchin, *The Modern Crisis,* 79.
21. Ibid., 23.
22. Bookchin, *The Ecology of Freedom*, 273.
23. Ibid, 223.

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24. Ibid., 231.
25. Ibid., 233.
26. Ibid., 273.
27. Ibid., 278.
28. Murray Bookchin,*The Philosophy of Social Ecology: Essays on Dialectical Naturalism* (Montreal: Black Rose Books, 1990), 27.
29. Bookchin, *Post-Scarcity Anarchism*, 100.
30. Bookchin, *The Philosophy of Social Ecology*, 30.
31. Ibid., 35.
32. Bookchin, *Post-Scarcity Anarchism*, 168–9.
33. Bookchin, *The Ecology of Freedom*, 9. For a perceptive discussion of how the power of necessity can undermine liberating movements, see Hannah Arendt, *On Revolution* (New York: Viking, 1965).
34. Bookchin, *The Ecology of Freedom*, 322.
35. Ibid., 344.
36. Ibid., 345.
37. Bookchin, *The Modern Crisis*.
38. Murray Bookchin,*The Rise of Urbanization and the Decline of Citizenship* (San Francisco: Sierra Club, 1987), 264.
39. Garret Hardin, *Filters against Folly* (New York: Penguin, 1985), 132–4. For somewhat similar developments in early New England towns, see Michael Zuckerman, *Peaceable Kingdoms: New England Towns in the Eighteenth Century* (New York: W. W. Norton, 1970).
40. Another advocate of small face-to-face polities, cited and praised by Bookchin, is Benjamin Barber, who does not appear to realize that his supporting authorities sometimes rebut his own arguments. See Benjamin Barber, *Strong Democracy: Participatory Politics for a New Age* (Berkeley: University of California Press, 1984), where he cites Douglas Yates as observing that "widespread internal conflict was the dominant characteristic of neighborhood governance" (273). This is not in itself an argument against small scale self-government, but it raises serious questions for communitarian theory. Of course, like Bookchin, Barber attempts to insulate his proposals from any possible contradiction. Thus, Barber argues that "participation without community, participation in the face of deracination, participation by victims or bondsmen or clients or subjects, participation that is uninformed by an evolving idea of a 'public' and unconcerned with the nurturing of self-responsibility, participation that is fragmentary, part-time, half-hearted, or impetuous—these are all finally sham, and their failure proves nothing" (153).
41. See, e.g., Harold E. Driver, "Personality and Culture," *Indians of North America*, 2nd rev. ed. (Chicago: University of Chicago Press, 1969), 431–55.
42. Bookchin, *The Ecology of Freedom*, 149.
43. Ibid., 344.

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44. Bookchin, *The Modern Crisis*, 89–90.
45. Karl Popper, *The Open Society and Its Enemies* vol. I., 5th ed. (London, 1966): 174–6; F. A. Hayek, *Rules and Order* (Chicago: University of Chicago Press 1973).
46. Bookchin might do well to consult F. A. Hayek, *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948); Trygve J. B. Hoff, *Economic Calculation in the Socialist Society* (London: William Hodge and Co., 1949); Ludwig von Mises, *Socialism* (New Haven: Yale University Press, 1951), and Don Lavoie, *Rivalry and Central Planning* (Cambridge: Cambridge University Press, 1985), in order to bring himself up to date.
47. Jane Jacobs, *Cities and the Wealth of Nations: Principles of Economic Life* (New York: Random House, 1984).
48. Gus diZerega, *Citizenship and Participation: A Reformulation of Democratic Theory* (Ph.D. diss., Dept. of Political Science, University of California, Berkeley, 1984).
49. Ilya Prigogine and Isabelle Stengers, *Order out of Chaos* (New York: Bantam, 1984). Bookchin criticizes him in *The Philosophy of Social Ecology* (Montreal: Black Rose Books, 1990), 71–2, 193–4.
50. Prigogine's (unintended but complete) answer is in Renée Weber, ed., *Dialogues With Saints and Sages: The Search for Unity* (London: Routledge and Kegan Paul, 1986), 194–5.
51. Michael Polanyi, *The Logic of Liberty* (Chicago: University of Chicago Press, 1951) and F. A. Hayek, *Rules and Order* (Chicago: University of Chicago Press, 1973).
52. Bookchin, *The Ecology of Freedom*, 37.
53. F. A. Hayek, *The Political Order of a Free People* (Chicago: University of Chicago Press, 1979), 157.
54. W. W. Bartley, "Alienation Alienated: The Economics of Knowledge versus the Psychology and Sociology of Knowledge," in Gerald Radnitzky and W. W. Bartley, eds., *Evolutionary Epistemology, Theory of Rationality, and the Sociology of Knowledge* (La Salle, Ill.: Open Court, 1987), 435; see also Paul Davies, *The Cosmic Blueprint: New Discoveries in Nature's Creative Ability to Order the Universe* (New York: Simon and Schuster, 1989), 194–196.
55. Bartley, 431.
56. Mancur Olson, *The Rise and Decline of Nations* (New Haven: Yale University Press 1982).
57. Alston Chase, *Playing God in Yellowstone, The Destruction of America's First National Park* (New York: Harcourt Brace Jovanovich, 1987).
58. Kenneth Lux, *Adam Smith's Mistake: How a Moral Philosopher Invented Economics and Ended Morality* (Boston: Shambhala, 1990). Lux's title is unfortunate, for his assessment of Smith is on the whole balanced. His real target is those economists (nearly all of them) who read Smith in a one-sided way.

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59. Hayek, *Rules and Order*; Ludwig Lachmann, *The Market as an Economic Process* (Oxford: Basil Blackwell, 1986). On the unsuccessful effort of many Austrians' to expunge economic man-type reasoning from their theory, see my "Democracy as a Spontaneous Order," CRITICAL REVIEW 3, no. 2 (Spring 1989): 228–9. I believe that Israel Kirzner's excellent "Self-Interest and the New Bashing of Economics: A Fresh Opportunity in the Perennial Debate?," CRITICAL REVIEW 4, nos. 1–2 (Winter-Spring 1990), still lets the problem in the back door. See particularly page 34 where he continues to hold that the market process simply "generates greater mutual awareness" rather than also changing the quality of that awareness.
60. Gus diZerega, "Democracy as a Spontaneous Order," 228–32. One risk of using a theoretical model is that the scientist will in time confuse the model with the world. Economists falling victim to this threat come to resemble sociopaths. Consider Lawrence Summers, the World Bank's chief economist, who circulated a memo on December 12, 1991, stating in part that "The measurement of the costs of health-impairing pollution depends on the forgone earnings from increased morbidity and mortality. From this point of view a given amount of health-impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages. I think the economic logic behind dumping a load of toxic waste in the lowest-wage country is impeccable and we should face up to that." See "Let them eat pollution," *The Economist*, Feb. 8, 1992: 66.
61. Lux, 132; see also Steven Rhoads, *The Economist's View of the World* (Cambridge: Cambridge University Press, 1985).
62. Lux, 169–190; see also Raymond Miller, *A Conservative Looks at Cooperatives* (Athens: Ohio University Press, 1964); Paul Bernstein, "Run Your Own Business: Worker-Owned Plywood Firms," *Working Papers for a New Society* 2, no. 2 (1974): 24–34; and John C. Sparks, *Production Unlimited* (Irvington-on-Hudson, N.Y.: Foundation for Economic Education), for a variety of brief perspectives and examples on cooperation and worker ownership within market systems.
63. Bookchin, *The Modern Crisis*, 56. Bookchin's reference to Kropotkin's work does not carry quite the weight he intends. Kropotkin, a reputable scientist as well as anarchist theorist, argued that there was far more evidence of cooperation than competition among animals of the same species in Siberia. The reason for the differences between Kropotkin's and Darwin's findings appears to be that in the harsh Siberian climate intraspecies cooperative strategies work better, while in the tropical systems Darwin examined intraspecies competitive relationships were more apparent. It is significant that Kropotkin also favored the Lamarckian view that acquired traits could be inherited. His Lamarckism aside, he simply described a variant of Darwinism wherein a species that was

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internally cooperative outcompeted one that was not. See Peter Kropotkin, *Mutual Aid: A Factor of Evolution* (London: Freedom Press, 1987); Jared Diamond, "Bach, God and the Jungle," *Natural History* (December 1990): 26; Stephen Jay Gould, "Kropotkin Was No Crackpot," *Natural History* (1988): 12–21; Peter J. Bowler, *Evolution: The History of an Idea*, rev. ed. (Berkeley: University of California Press, 1989), 228.

64. Bookchin, *The Modern Crisis*, 56; William Trager, *Symbiosis* (New York: Van Nostrand Reinhold Co., 1970), vii.
65. Holmes Rolston, III, "Duties to Ecosystems," in J. Baird Callicott, ed., *Companion to A Sand County Almanac* (Madison: University of Wisconsin Press, 1987), 250.
66. Ibid., 251.
67. Hayek, *Rules and Order*, 152 n 33; see also David Hume, *Moral and Political Philosophy*, ed. Henry D. Aiken (New York: Hafner, 1948), 49–69, 270–75.
68. See J. Baird Callicott, *In Defense of the Land Ethic* (Albany: SUNY Press, 1989), 85–86; see also Donald Worster, *Nature's Economy: A History of Ecological Ideas* (Cambridge: Cambridge University Press, 1985), 114–87. For Adam Smith's views, see his discussions of sympathy, especially ch. 2 in *The Theory of Moral Sentiments* (New Rochelle, N.Y.: Arlington House, 1969). See also Hume's discussions of sympathy, particularly his appendix II "Of Self Love" in his *A Treatise on Human Nature.*
69. F. A. Hayek, *The Mirage of Social Justice* (Chicago: University of Chicago Press, 1976), 108.
70. Worster, 314.
71. Davies, 52–6; see also John Briggs and F. David Peat, *Turbulent Mirror: An Illustrated Guide to Chaos Theory and the Science of Wholeness* (New York: Harper and Row, 1990), 83, 10, 147–8. Roger Alexander points out that Newton was ultimately not a reductionist. Newton's extensive research in alchemy "ultimately enabled him to break with the reductionist mechanics of his time." Further, his theory of gravity was certainly not reductionist, and indeed its appeal to the "occult force" of action at a distance was largely why it was so opposed at the time.
72. Davies, 101, and also 100–106, 142–46; see also Ernst Mayr, *Toward a New Philosophy of Biology: Observations of an Evolutionist* (Cambridge, Mass.: Harvard University Press, 1988), 8–23; Briggs and Peat, 147–50; and Henri Atlan, "Uncommon Finalities," in William Irwin Thompson, ed., *Gaia, A Way of Knowing: Political Implications of the New Biology* (Great Barrington, Mass.: Lindesfarne Press, 1987), 110–27.
73. Davies, 118–19.
74. Michael Polanyi, *Knowing and Being: Essays by Michael Polanyi,* ed. Margorie Grene (Chicago: University of Chicago Press, 1969), 225–39; Polanyi, *Logic of Liberty*; and Davies, 194.
75. Davies, 75, 83; Worster, 295.
76. James Lovelock, *The Ages of Gaia: A Biography of Our Living Earth* (New

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York: W. W. Norton 1988); Lynn Margulis, "Early Life: The Microbes Have Priority," in Thompson, ed., 98–109; Lawrence E. Joseph, *Gaia: The Growth of an Idea* (New York: St. Martin's Press, 1990); Davies, 131–2; Briggs and Peat, 161–4.

77. Rolston, 256–7.
78. Hayek, *Rules and Order*, 114–15.
79. Stephen Jay Gould, "The Horn of Triton," *Natural History*, December 1990: 15.
80. Ibid., 18.
81. Rolston, 257.
82. Bookchin, *The Philosophy of Social Ecology*, 47.
83. Bookchin, *Social Ecology*, 277. Bookchin's attacks on deep ecology are notable mostly for their venom. To my knowledge, his most recent effort was "Will Ecology Become 'the Dismal Science'?" *Progressive,* December 1991: 18–21. This piece was followed by an outpouring of letters, all opposed, and Bookchin's inane rejoinder; "Readers Respond to Murray Bookchin's Essay on Ecology," *Progressive,* March 1992: 5–8.
84. Bookchin, *Philosophy of Social Ecology*, 41–3.
85. Ibid., 182.
86. Ibid., 42.
87. Bookchin takes Robyn Eckersley to task for interpreting him in a fashion similar to my own. He contends that she refers only to his earlier work in drawing such conclusions. This is less than forthright, as my references to his later work indicate. But then Bookchin can be quoted on virtually every side and shade of interpretation of humanity's proper relationship to the natural world. His abstract theorizing and studious avoidance of helpful examples leaves the reader uncertain at many points where he really stands. Whom he attacks seems the best guide as to where he really stands. I have done my best. See Robyn Eckersley, "Divining Evolution: The Ecological Ethics of Murray Bookchin," *Environmental Ethics* 11 (1989): 99–116; and Bookchin's response, "Recovering Evolution: A Reply to Eckersley and Fox," *Environmental Ethics* 12, no. 3 (1990).
88. Warwick Fox, "Post-Skolimowski Reflections on Deep Ecology," *Trumpeter* 3, no. 4 (Fall 1986) : 16.
89. There are a number of good overviews of this alternative vision. See especially Worster, *Nature's Economy*; Roderick Nash, *Wilderness and the American Mind* (New Haven: Yale University Press, 1982); and Max Oelschlaeger, *The Idea of Wilderness: From Prehistory to the Age of Ecology* (New Haven: Yale University Press, 1991).
90. For example, see Anna Bramwell, *Ecology in the Twentieth Century: A History* (New Haven: Yale University Press, 1989).
91. Erazim Kohák, *The Embers and the Stars* (Chicago: University of Chicago Press, 1984), 8.

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92. Abraham Maslow, *The Farther Reaches of Human Nature* (New York: Viking, 1971), 69.
93. This may not hold for the greatest photographers, but even Galen Rowell would not argue with the basic point, at least when applied to most. Galen Rowell, *Mountain Light: In Search of the Dynamic Landscape* (San Francisco: Sierra Club Books, 1986), 29, 32. See also Annie Dillard, *Pilgrim at Tinker Creek* (New York: Harper's Magazine Press, 1974), 31. The difference between the greatest nature photographers and the rest of us is probably that the great photographers virtually live through their cameras, which have become extensions of themselves.
94. Kohák, 63.
95. Holmes Rolston, III, *Environmental Ethics* (Philadelphia: Temple University Press, 1988), 117–18.
96. Kohák, 13. Accounts of how this view came to dominate in the West can be found in Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (San Francisco: Harper and Row, 1980); and Evelyn Fox Keller, "Baconian Science: The Arts of Mastery and Obedience," and "Spirit and Reason at the Birth of Modern Science," in *Reflections on Gender and Science* (New Haven: Yale University Press), 33–65.
97. Kohák, 40.
98. George Grant, *Technology and Justice* (Toronto: Anansi, 1986), 40, 50. See also Michael Polanyi, *Knowing and Being: Essays by Michael Polanyi*, ed. Marjorie Grene (Chicago: University of Chicago Press, 1969), 128. I am indebted to Laurent Dobuzinskis for introducing me to Grant's work.
99. Kohák, 104.
100. Hayek, *The Political Order of a Free People*, 157.
101. Hume, bk. I pt. 4, sec. 6. See also Joanna Macy, *Mutual Causality in Buddhism and General Systems Theory: The Dharma of Natural Systems* (Albany: SUNY Press, 1991) 107–16.
102. Arne Naess, *Ecology, Community and Lifestyle* (Cambridge: Cambridge University Press, 1989), 56–57. Naess's is not the only such approach to comprehending our world. His, however, strikes me as one of the most easily grasped and is also philosophically rigorous in the modern sense. Other contemporary discussions of deep ecology include Gary Snyder, *The Practice of the Wild* (San Francisco: Northpoint Press, 1990); Warwick Fox, *Toward a Transpersonal Ecology* (Boston: Shambhala, 1990); Bill Devall, *Simple in Means, Rich in Ends: Practicing Deep Ecology* (Salt Lake City: Peregrine Smith Books, 1988); Bill Devall and George Sessions, *Deep Ecology: Living as if Nature Mattered* (Salt Lake City: Peregrine Smith Books, 1985); and Dolores LaChapelle, *Sacred Land, Sacred Sex, Rapture of the Deep: Concerning Deep Ecology and Celebrating Life* (Silverton, Colo.: Finn Hill Arts, 1988). See also the two journals *Environmental Ethics* and *Trumpeter*. The philosophical forbearers of deep ecology played a minor role in Western philosophy, yet it is they whose conceptions of reality are

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now in basic harmony with modern experimental physics. See in particular the work of Arthur North Whitehead. See J. Baird Callicott and Roger T. Ames, eds., *Nature in Asian Traditions of Thought* (Albany: SUNY Press,1989). Much of the traditional Native American perspective is relevant here as well. See J. Baird Callicott, *In Defense of the Land Ethic*, 177–219; John (Fire) Lame Deer and Richard Erdoes, *Lame Deer: Seeker of Visions* (New York: Pocket Books, 1972) John G. Neihardt, *Black Elk Speaks: Being the Life of a Holy Man of the Oglala Sioux* (New York: Pocket Books, 1972); Thomas E. Mails, *Fools Crow* (Lincoln: University of Nebraska Press, 1979); Joseph Eppes Brown, *The Spiritual Legacy of the American Indian* (New York: Crossroads, 1982); and Doug Boyd, *Rolling Thunder* (New York: Delta, 1974). For a history of the contrast between holism and reductionism in ecological thought, see Worster, *The Economy of Nature*.

103. Polanyi, *Knowing and Being*, 139.
104. Naess, 58.
105. Macy, 184.
106. Naess, 60–61.
107. Macy, 109.
108. Naess, 60.
109. Kohák, 107.
110. Polanyi, 127–8; Evelyn Fox Keller, "A World of Difference," 158–76.
111. Even if we ignore the most recent advances in physics, and try to hold onto the old idea of a world consisting ultimately of objects, their properties are so abstract when freed from "subjectivism" that they could never be experienced. They have size, shape, and movement, but no color, warmth, or the like. Try to imagine the ghostly world consisting of only such "objective" qualities. And, of course, the world of modern physics is even farther removed from our normal experience. See Hans Jonas's excellent discussion in *The Phenomenon of Life: Toward a Philosophical Biology* (New York: Harper and Row, 1966), 64–92; and Mary Midgely, *Wisdom, Information and Wonder: What Is Knowledge For?* (London: Routledge, 1989).
112. Polanyi, *Personal Knowledge* (Chicago: University of Chicago Press, 1958).
113. Mark Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason* (Chicago: University of Chicago Press, 1987), 62.
114. Einstein quoted in Evelyn Fox Keller, *A Feeling for the Organism: The Life and Work of Barbara McClintock* (New York: W. H. Freeman and Co., 1983), 200–201; Konrad Lorenz, *On Life and Living: Konrad Lorenz in Conversation with Kurt Mündl* (New York: St. Martin's Press, 1990), 6, 16–18, and indeed much of this delightful book. Malinowski is quoted in Hans Peter Duerr, *Dreamtime: Concerning the Boundary Between Wilderness and Civilization* (Oxford: Basil Blackwell, 1987), 349–50; see also 114–15.

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Lawrence Summers quoted in n60. It is interesting that in their attempt to ape their conception of the physical sciences, the social scientists so often deny the caring relation to human beings which so many natural scientists apply to nonhuman nature.

115. John Ziman, *Reliable Knowledge* (Cambridge: Cambridge University Press, 1978); *Public Knowledge* (Cambridge: Cambridge University Press, 1968); and Stephen Toulmin, *Human Understanding* (Princeton: Princeton University Press, 1972).
116. Kohák, 12. Some scientific paradigms do have such a place, but they are unfortunately not reflective of mainstream views. Besides the work of Polanyi, see Marjorie Grene, *The Knower and the Known* (Berkeley: University of California Press, 1974); and Keller, *Reflections*.
117. Hans Jonas, *The Phenomenon of Life: Toward a Philosophical Biology* (New York: Harper and Row, 1966), 64–92.
118. Kohák, 65.
119. Devall, *Simple in Means*, 74.
120. For a discussion of the various implications of this point, see Duerr, *Dreamtime*. See also Christopher Manes, "Nature and Silence," *Environmental Ethics* 14, no. 4 (Winter 1992): 339–50.
121. For two different but ultimately complementary perspectives on this point, see Roy A. Rappaport, "Adaptive Structures and Its Disorders," and "Sanctity and Lies in Evolution," in *Ecology, Meaning, and Religion* (Berkeley: North Atlantic Books, 1979); and Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water* (New York: Penguin, 1986).
122. Jay Hansford C. Vest, "Will-of-the-Land: Wilderness among Primal Indo-Europeans," *Trumpeter* 3, no. 1 (Winter 1982): 4. This Indo-European tradition was hardly unique. It exists among many, perhaps all, primal peoples. For a contemporary example, see Richard K. Nelson, *Make Prayers to the Raven: A Koyukon View of the Northern Forest* (Chicago: University of Chicago Press, 1983). For Nelson's meditations on the applicability of such a view to the modern world, and his attempt to live it, see his *The Island Within* (New York: Vintage, 1991).
123. Fox, 20.
124. For example, see Holmes Rolston, *Environmental Ethics: Duties to and Values in the Natural World* (Philadelphia: Temple University Press,1988).
125. Callicott, *In Defense of the Land Ethic*, 93–4.
126. The third system, liberal democracy, will strike some as perverse. But see my "Democracy as a Spontaneous Order," n 60 above. To elaborate the point would go beyond the confines of this essay.
127. On this distinction, see Gus diZerega, "The Human Side of Human Action" (paper delivered at Libertarian Scholars Conference, Stanford University, 1980); and Ulrich Fehl, "Order and the Subjectivity of Expectations: A Contribution to the Lachmann–O'Driscoll Problem," *Subjec-*

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tivism, Intelligibility, and Economic Understanding, ed. Israel M. Kirzner (New York: New York University Press, 1986).

128. Hayek, *The Political Order of a Free People* 75–6. For a critique of this view of rationality as described by Mises, see Brand Blanshard's *Reason and Analysis* (La Salle, Ill.: Open Court, 1973), 52–4.

129. James Buchanan and Vitktor J. Vanberg, "The Market as a Creative Process" (paper prepared for Liberty Fund Conference, "An Inquiry into Liberty and Self-Organizing Systems," April 26–29, 1990, Rio Rico, Arizona), 20; see also Israel Kirzner's quotation in n59 above.

130. For example, see Terry L. Anderson and Donald R. Leal, *Free Market Environmentalism* (Boulder: Westview Press, 1991); and Fred Lee Smith, "Environmental Cloisters," *Policy Review* no. 54 (Fall 1990): 94.

131. This tradition also includes animal rights theorists who are often confused with ecological writers. Two examples are Tom Regan, *The Case for Animal Rights* (Berkeley: University of California Press, 1983); and Peter Singer, *Animal Liberation: A New Ethics for Our Treatment of Animals* (New York: Prentice-Hall, 1975). Roderick Nash struggles with the problems of integrating animal rights and ecological thinkers under a common rubric in *The Rights of Nature* 137–60, although ultimately I believe he is unsuccessful. For a critical examination of these issues see also J. Baird Callicott, *In Defense of the Land Ethic*, 15–47.

132. See Hayek's discussion in *Studies in Philosophy, Politics, and Economics* (New York: Simon and Schuster, 1969), 66–121; and in *New Studies in Philosophy, Politics, Economics and the History of Ideas* (Chicago: University of Chicago, 1978), 249–66; Thomas Luckmann and Peter Berger, *The Social Construction of Reality* (New York: Anchor, 1967); Berger, *The Sacred Canopy* (Garden City, N. Y.: Anchor, 1969); id. "The Problem of Multiple Realities: Alfred Schutz and Robert Musil," in Maurice Natanson, ed., *Phenomenology and Social Reality* (The Hague, Martinus Nijhoff); and id., *The Capitalist Revolution: Fifty Propositions about Prosperity, Equality, and Liberty* (New York: Basic Books, 1986).

133. Hayek, *Studies in Philosophy, Politics, and Economics*, 22–42.

134. Keller, *Reflections*, 134–5. For a case study of the kind of science she recommends, see *A Feeling for the Organism*.

135. Steve Buckner, "Legal Snags Block Land Purchase," *Lawrence Daily Journal World*, November 20, 1990: 1A; "Prairie Purchase Still Under Study," *Lawrence Daily Journal World*, November 21, 1990: 3A; and Elicia Hill, "County Could Spend $480,000 to Prevent Ploughing of Prairie, *University Daily Kansan*, November 19, 1990: 1.

136. Devall and Sessions, *Deep Ecology*, 125. For perceptive discussions of stewardship, see Wendell Berry's work, particularly *Home Economics* (San Francisco: Northpoint Press, 1987), 54–75; *Standing by Words* (San Francisco: Northpoint Press, 1983), 24–63; and *The Gift of Good Land* (San

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Francisco: Northpoint Press, 1981), 249–63. See also John A. Hostetler, *Amish Society* 3rd ed. (Baltimore: Johns Hopkins University Press, 1980).

137. N. Scott Momaday, "A First American Views His Land," *National Geographic*, July 1976: 18. Quoted in Duerr, 241–2.
138. On land trusts, see Jennie Gerard and Sharon Johnson, "Sunshine Agriculture and Landtrusts," in Wes Jackson, Wendell Berry, and Bruce Colman, eds., *Meeting the Expectations of the Land: Essays in Sustainable Agriculture and Stewardship* (San Francisco: Northpoint Press, 1984), 126–34. See also the several essays on the subject in *Trumpeter* 7, no. 1 (Winter 1990).
139. Richard Stroup and John Baden, "Property Rights and Natural Resource Management," *Literature of Liberty* 2, no. 4 (September-December 1979): 26–33.
140. Hayek, *Rules and Order*, 55–71.
141. Hayek, *The Mirage of Social Justice*, 114.
142. John Briggs and F. David Peat, *Turbulent Mirror: An Illustrated Guide to Chaos Theory and the Science of Wholeness* (New York: Harper and Row, 1990), 166.
143. Aldo Leopold, *A Sand County Almanac* (New York: Ballantine, 1970), 262; also Callicott, *Defense of the Land Ethic*, and id., ed. *Companion to a Sand County Almanac* (Madison: University of Wisconsin Press, 1987).
144. It is too little appreciated that liberal civilization has freed its participants from the scourge of overpopulation, one that has ultimately undermined agricultural societies worldwide. It has done so by making children an economic liability rather than an asset. The only population pressures afflicting liberal societies are immigration and possibly the effects of artificially reducing the costs of childrearing. Only in the Third World is there still an economic justification for large families. The results are horrendous.

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Erazim Kohák

SPEAKING TO TREES

What is the epistemological status of a world within which speaking to trees would appear as an appropriate behavior? It would be a world perceived as a community of autonomous beings worthy of respect. Such a world contrasts with the anthropocentric conception of the world as a value-free reservoir of raw materials, but neither worldview can or should claim descriptive accuracy. Both are equally "manners of speaking" and the choice between them must rest on whether they are conducive to ecologically constructive or ecologically destructive behavior. On that basis, speaking to trees is a legitimate, speaking of biomechanisms an illegitimate form of verbal behavior.

When a philosopher and a tree converse, what do they talk about?

In contemporary ecological thought speaking to trees is by no means a marginal matter. The attitude to nature represented by authors such as Aldo Leopold, Arne Naess, Konrad Lorenz, and Gary Snyder builds on a recognition of nonhuman beings as our autonomous kin, worthy

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of respect. In Martin Buber's idiom, it is a matter of recognizing such beings as "Thou"—not as a mute "it" but as a fellow being in a community of discourse. If that assertion sounds unusual, it may be in great part because we tend to think of discourse theoretically, as an exchange of information in a definite natural language. A conversation between two computers may in fact be no more than that. Human discourse, however, is just as likely to be a matter of shared silences, of exchanged gestures and hints, intended as much to acknowledge the other as to exchange information. It does not depend entirely on an exchange of words. The community of those we address includes adults who are deaf and mute, as well as infants, and domestic animals. It is, first and foremost, a community of respectful transaction which, among humans, is indicated by speaking. When Aldo Leopold defines ecology as a matter of extending ethical dealing—that is, respectful, considerate transaction—to nonhuman beings,[1] he is really speaking of including such beings within the community of discourse. Speaking to trees is then entirely appropriate as an expression of respect.

Ecology: Laconic vs. Loquacious

There are, to be sure, also a great many ecologists who have nothing to say to a tree. The urgent need to contain the destructive impact of expanding human demand on a finite nature has brought together under the common "ecological" roof two very distinct approaches which start out with rather different presuppositions and aim, ultimately, at rather divergent goals. One accepts as a priori legitimate whatever goals a person or a society sets for itself and seeks only to devise "eco-friendly" means and procedures for achieving them—a solar car with biodegradable tires, driven only on alternate days. The other approach leaves technology to engineers and asks about our goals. Is ever-rising individual mobility—and ever-expanding individual consumption in general—the goal we wish to pursue, however ecologically? Is that the *summum bonum* for humans—or would it be problematic even if we could achieve it in "eco-friendly" ways?

In those parts of the world where the term has not been discredited by the pretensions of "scientific" Communism, it is common to speak of the first, laconic approach as "scientific" ecology, though some designation such as "technical" might be more appropriate since its concern is with *techne*, with the means of accomplishing whatever

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humans desire rather than with the desire itself. Ministers of the Environment, meeting at international conferences, typically write off the question of their societies' goals as a matter for politicians and philosophers. Theirs is the technical task of accomplishing those goals in ways compatible with long-range sustainability. With the rare and honorable exception of Norway's Gro Harlem Brundtland or Czechoslovakia's Josef Vavroušek, public officials do not question the familiar anthropocentric idea of humans—or "Man"—as the sole source of whatever meaning there may be or of value as the byproduct of human needs and desires, wholly contingent on them. "Good" means "good for 'Man,'" "value" means "value for 'Man.'" The non-human world tends to enter into their calculations solely as a store of raw materials to serve human needs, valuable only as such. Trees and animals simply *are*, there to be used "for the good of 'Man.'" Their well-being is important . . . though only as it serves human needs.

The idea of a foam-rubber tank tread to use in fighting wars in fragile ecosystems fancifully contrasts technological concern for the environment with an unquestioning acceptance of the legitimacy of whatever humans wish to do. Less fancifully, I have heard a speaker advocate a humane system of slaughtering chickens in battery farming. There is soft light and soothing background music as a moving belt carries the animals to the blade that beheads them; a special exhaust system removes the telltale smell of blood. There is none of the terror and the panic, none of the agonized anxiety typical of conventional mass slaughtering techniques. It seems that the adrenalin or whatever is released by the body in the fear of death negatively affects the flavor of the meat. Unwittingly, I recalled something I had read about the African slave trade of two centuries ago. Many slave traders, it seems, were genuinely concerned about the appalling conditions aboard slave ships and sought to improve them. The high mortality in transit and the poor condition of the survivals upon arrival cut into profits. It never occurred to them to question the legitimacy of the slave trade, and they would have rejected as utter sentimentality any consideration of the intrinsic evil of suffering of the slaves.

Technologically oriented ecology does not question the legitimacy of the "expanding economy," and specifically of ever-increasing human individual material consumption, as "progress" and the goal of all human activity. It understands its task solely as one of making sure that the negative side-effects of such "progress"—using up nonrenewable resources and accumulating waste—will not stand in the way of further expansion of individual consumption. It will, for instance, try to make private automobiles as efficient and as nonpolluting as possible, but it will not question the desirability of private automobiles as long as "the public"

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desires them. Nor, in general, does it question the legitimacy and desirability of ever-greater consumption of energy. It strives only to make its generation as ecologically harmless as possible, though it is prepared to accept some harm as inevitable. It does not call into question the basic conception of humans as the sole masters of the storehouse of raw materials or of ever-expanding individual consumption as the ultimate goal of human existence. Its only question is how to render such infinite claims compatible with the finitude of nature.

Technological ecology has proved of crucial importance in reducing the vast surplus of suffering as well as the impact of rising consumption on the environment. Precisely because it does not call into question our accustomed conceptions and our vested interests—if anything, it reassures us that we can go on living as we have been living if only we recycle our bottles—it tends to generate much less resistance and is likely to gain the support of government and industry alike. It can markedly improve the quality of our environment: the dirty triangle of Poland, Czechoslovakia and the former DDR is an example of what the industrial world would look like without it. Europe is a tight little continent—and, increasingly, the world is a tight little planet. If nature is to survive our presence, we need to make that presence as nondestructive as we can. If, in addition, we include under human needs such needs as that for a healthy environment, for recreational opportunities "in nature," or for the pleasure of watching whales and elephants, even purely anthropocentric technological ecology can acquire a distinctly conservationist dimension leading to proposals for sustainable growth.[2]

Then why talk to trees at all? The idea of a foam rubber-treaded tank for fragile ecosystems or of a solar powered battle ship to prevent oil spills in naval warfare points out the limitations of a technological ecology. Sometimes it is not just how we do it but rather what we do that is destructive. Technologically enhanced by a factor of seventy and multiplied by five billion, even seemingly innocuous activities like fishing or driving an automobile can become destructive.[3] If we take the idea of a peaceful coexistence of humans with nonhuman nature seriously—even if only for the sake of long-term human survival—we need to ask not only how to do whatever we do but also what is worth doing and striving for. We need not only a technological but also a moral ecology.

So used, the term *moral* is something of an archaism, harking back to the eighteenth-century use of the word as pertaining to the works of human freedom rather than the works of natural necessity, and specifically to the question of the *summum bonum*, of the chief end of being human. What is

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our life on this earth all about? Is it really about ever-increasing consumption?

Our current usage has no convenient term to designate that dimension of inquiry. The term *deep ecology* will not quite do because it designates something more specific—the assumption that modernity's problem is the alienation of humans from the depth of their own nature, of which the maltreatment of environing nature is both a symptom and a product. The task of ecology would then be to "reconnect" humans with the depth of their being and only consequently and accidentally to the actual environment.[4]

That may well be a legitimate approach, but other approaches are no less possible. We might, for instance, claim that the problem is human alienation from the environing nature in the very concrete sense of losing touch, getting out of step—we walk on asphalt, not on the good earth; we look up at neon, not the starry heaven above; we touch plastic, not living wood. It is not our Jungian unconscious but living nature with which we need to reconnect.[5] Should we speak of a "natural" ecology?

Or again we might claim that the alienation—if that is indeed the problem—is one from our cultural heritage, a loss of our cultural bearings amid the onslaught of consumerism. Should we speak of a "cultural" ecology?[6] It is certainly not a "deep" ecology, but neither is it a simply technocratic one. If we could use the term *moral* in its eighteenth-century sense, it would be most appropriate. Since we can't, perhaps the term *philosophical ecology* will serve to cover the deep, the naturalistic, and the cultural orientation and to distinguish them from technological ecology.

Philosophical ecology is substantially older than technical ecology. It could claim the Roman poet Virgil or the Renaissance writer Petrarch among its ancestors. In some instances, such as Rachel Carson's warning against the overuse of pesticides,[7] it helped stimulate significant technical-ecological advances. Still, their roots are different. Technical ecology arose as a response to the perceived threat to "progress" stemming from our own rapacity and waste: the first report of the Club of Rome, *The Limits of Growth* (1972) warned basically that a depletion of natural resources would endanger our prosperity. In contrast, philosophical—or *moral*—ecology arose at a time when nature still seemed inexhaustible. It was born of horror and pity at the ruthless devastation of nature and at the agony of our nonhuman kin, of forests, animals—and of the shocked recognition that it is we humans who are bringing it about.

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The Shock and the Recognition

That is the twin root of all philosophical or moral ecology, the recognition that nonhuman being is no mere *materia* but has a life, a worth, and an agenda of its own, and the shock at the way our entirely ordinary treatment of extrahuman nature appears once we recognize the integrity of that nature as a part of a community of discourse. That is why, for all the many divergencies within the broad category of philosophical or moral ecology, speaking to trees remains a common element—and why the first thing a philosopher says to a tree is "Sorry."

Less fancifully, we might say that the common trait of all philosophical ecology, from Francis of Assisi through Emanuel Rádl to Gary Snyder and Annie Dillard, is the experiential component. Nature for such writers is not a theoretical concept but something to be encountered and addressed directly, as a fellow being in all its immediacy, an object of empathy, not simply of manipulation.

This is not, we should stress, a question of an emotional as against a rational approach. The domineering, anthropocentric attitude to nature is never simply rational. It is no less a matter of emotion, building on a feeling of the superiority of humans as well as on a feeling of the absurdity and value-neutrality of the nonhuman world—on a feeling for which reason then finds reasons. Conversely, philosophical or moral ecology is not a question only of certain "feelings" but also of reasoned reflection about humans and their place in the cosmos. The basic difference is not a matter of the way philosophical ecologists theorize about the world but of the way they experience both nature and themselves, both rationally and emotionally. Philosophical ecologists share a lived experience of being human and of nature, an experience that does not start with a privileged community of Buberian "Thou's" and a disfranchised context of "it" and "that," but with a community of respectful discourse.

Here the dictum of the American personalists that "the world is a community of persons"[8] is to the point. For the personalists, *person* is a technical term. It is not simply a synonym for a member of the species *Homo sapiens sapiens* but rather a designation of a particular mode of being. The etymology of the Czech equivalent of person, *osoba*, is suggestive. It suggests a being *o sobě*, of its own: to speak of a being as a person means to recognize it as a being with its own life, its own agenda, its own intrinsic worth and worthy of respect as such.

The Latin *persona* once meant the mask that indicated to the spectator

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the role an actor was assuming: *persona* is a role, a person is a being that has its own role, its own agenda, and so its own claim to respect. A person is ultimately a being worthy of respect for its own integrity. To say that "animals are little persons in fur coats" does not mean that animals are homunculi, little people, but rather that they are persons, beings worthy of respect. The key to understanding being and value here is not Man, the *Homo mensura*. Life itself, the autonomous being of all that is, is the source of meaning and value. All the world is a community of beings worthy of respect. A human, member of the species *H. sapiens sapiens*, typically expresses respect by speaking. Thus it is quite appropriate to speak to a tree even though the tree will not respond with words but in the way appropriate to its own kind.

In spite of the fanciful metaphor, the recognition that all life, all being both bears within it and constitutes value around it is not a matter of some manner of emotive mysticism. It has a clear meaning. Value arises in relation to a subject and not only humans are subjects. All living beings are that, having their own integrity, their own life, and their own purpose in living. For such a being, its life is good, worth struggling for, worth striving for. That is the intrinsic worth of a life and the reason why life ought to be respected: it cherishes its own life.

And beyond that, because it is good, all that helps sustain it, all that sustains that intrinsic worth, is good derivatively, instrumentally, and is worthy of respect on that account. So even the grass no human crofter mows is no mere *res extensa*, devoid of all but extensional properties. It is intrinsically good in its own agenda, as it seeks to live and grow. It has, in addition, an instrumental goodness as it sustains the beasts of forest and field. We are never justified in destroying it or wasting it. Our use of it can never be heedless: it calls for ethical justification.[9] So perceived and so conceived, the world is not just a storehouse of raw materials. It is value-laden, meaningfully ordered, because it is a community of "persons." In a world so experienced, not only technical, but also a philosophical ecology—moral ecology in the archaic sense of that term—is in order.

A Ghost in the Machine?

To dismiss such a conception as "panpsychist" would rest upon a basic confusion of terms. There can be a ghost in the machine only if there is a machine—and a personalist conception denies that there are

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machines except perhaps for the ones constructed by humans. A panpsychism starts out with the conception of a divided world in which something called a *psyché*—whether we interpret that as consciousness, as a soul, or as Mind—represents one type of being, while all else belongs to a wholly different type of being, merely extensional, mathematically, and causally ordered—in a word, a machine. In a world so divided the question then appears to be which of the latter type of objects have a *psyché* associated with them, whether duly baptized Christians only, whether all human beings, or whether, perhaps, all living beings. In the last instance we can then speak of a panpsychism: *psyché* remains something distinct, a *res cogitans*, but it is said to be associated with each and every *res extensa*.

The biocentric conception of philosophical ecology is something quite different. It does not invent ghosts, it does not consider life a psychic addition to a machinelike matter. It rejects the division of reality into *res extensa* and *res cogitans*. We do not need to add autonomy, an agenda of their own to machinelike beings because they are not machinelike. A life and an agenda of their own are what defines them and how they present themselves to us. A tree, an animal, perhaps even a boulder lead their own autonomous lives, have their own agendas. They are their own beings, *o sobě*—persons.

To such a mode of experiencing—and, derivatively, to such a mode of reflecting—the specifically human personality does not appear as something special or "higher." Humans are neither "higher" nor "lower": they are simply some of the many dwellers of this earth. The human claim to life and sustenance is no less—and no more—valid than that of any other species. Prima facie, it is no more legitimate to exterminate wolves to make room for humans than to exterminate humans to make room for wolves. We are fellow beings upon the earth, with an equal claim to it. We humans are distinct in perhaps only one way: since we are free, we are charged with the task of making a harmonious coexistence of all upon this earth possible.

That human specificity is hardly a cause for pride. It is far more a recognition that we humans have a badly inadequate instinctual apparatus. More than other higher vertebrates, we must rely on conscious decisions in our acting. While other beings can simply act as their instinctual apparatus instructs them and leave up to nature the working out of the consequences, we must accept responsibility for our acting. A wolf can quite naturally hunt small rodents and, occasionally, also aging or ailing larger animals, letting nature worry about the balance of life. A human fishing from an automated factory ship must

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ask consciously, how much is enough, and what is too much? All his answers will be equally "natural"; not all will be equally good. That is a moral category, pertaining to the works of human freedom. Anthropocentric technical ecology may ignore it, but philosophical ecology must raise that question: all things are "natural," but which things are good?

The Other Modernity

In ecological circles, it has become customary to label the anthropocentric conception of humans and the world as "Cartesian," with reference to René Descartes's division of reality between *res cogitans* and *res extensa*. This, to be sure, is not quite accurate. As Jan Patočka has pointed out, the "modern" conception of humans as the sovereign masters of a meaningless, value-free world may build on Descartes, but is far from being a faithful explication of his views. Nor was Descartes alone in holding those views: a Spanish physician, Gomez Perreira, held them a century earlier, and others, such as Mersenne and Gassendi, shared them during and after Descartes's time. Still, Descartes has become a convenient symbol of modernity. In contemporary ecological writing, a chapter condemning Cartesianism has become as obligatory as a chapter praising it once was in treatises on "modern" philosophy.

Using the same kind of license, we might perhaps not wholly illegitimately speak of the alternative conception as "Comenian," in honor of the man who, in Descartes's lifetime, appeared as the other great European thinker: Jan Amos Komenský, known to the Latin-speaking West as Comenius.[11] Certainly, Comenius was not the only one to hold such views: the conception of the cosmos as value-laden and meaningfully ordered was common in the Renaissance. We find it in others in later years, in Leibniz, Goethe, Schelling—and even in Husserl's conception of the life-world in the *Krisis*. Still, at the turn of the ages, it was the two men, Descartes and Comenius, who offered the new age a conceptual matrix as a replacement for the crumbling medieval synthesis.

Modernity, for better or for worse, chose the Cartesian option. For generations, his rival was known to the world only through Pierre Bayle's article in the *Encyclopaedia*, heaping upon Comenius the particularly vitriolic scorn that the Enlightenment reserved for the Renaissance and the Middle Ages. It was an unfair condemnation. Comenius

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shared with the Middle Ages and especially with the Czech reformation a strong Christian faith, but he did not understand it in a medieval way. What is typical in most medieval thought is what we could call its metaphysical positivism: the uncritical conviction that metaphysical speculation can provide a positive description of an univocal "metaphysical" reality and that therefore only one conceptual schema can be a true description, while others must be erroneous. That conviction led the medievals to burn heretics. By contrast, Comenius was ready to interpret conceptual schemata as diverse attempts to articulate a reality that cannot be described univocally. Our words point to the truth, they do not contain it. In spite of the passions of the wars of religion, he was willing to get along with his opponents with a tolerance nothing short of Rortian. His conception of truth was not medieval: if anything, it was far more contemporary than some of the dogmatism of Cartesian scientific philosophy.

Nor was Comenius simply a lonely holdout of the Renaissance. True, he shared with the Renaissance the conception of a value-laden and meaningfully ordered cosmos as well as the conception of a cosmic harmony of all being as both the ultimate truth and the present task of humans. There is, however, about Comenius nothing of what Foucault thinks most distinctive of the Renaissance, the conception of reality as a text. Nor does Comenius's thought show any of the aristocratic abstraction so typical of the Renaissance. Comenius is deeply involved in the concrete world in all its tangible reality, as concrete as the illustrations in his *Orbis pictus*.

Altogether, Comenius was emphatically a man of the new age, a man of the Enlightenment, seeking in knowledge based on direct cognition of this world the key to a universal emendation of human affairs. There is, however, one crucial difference. The order that science—or better, *scientia*—is to seek is to him not in the first place mathematical and causal but rather meaningful and moral. His is a proposal that prefigures what we are now groping for, frequently by turning to Native American and Asian models. Yet the difference is not one between Europe and Asia, nor between a "modern" civilization and a "natural" one. It is a difference between two conceptions of modernity.

Retrospect distorts. Since modernity in fact took the Cartesian route, it is tempting to think of the Cartesian option as modern and all else as surpassed by it. Yet in the seventeenth century, Europe did not stand on a univocal track between the past and a predetermined future. It stood at the end of its medieval and its Renaissance past, with no

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clear road ahead. There were at least two possibilities. One was the now-familiar Cartesian one, based on human domination of a dehumanized world. The second, a Comenian one, was based on respect for the harmony of a world conceived as a community of beings worthy of respect, value-laden, and meaningfully ordered. Europe chose the former.

In a Manner of Speaking

In the spirit of Comenius, it would be hard to claim that Europe's choice was mistaken because reality "really is" Comenian rather than Cartesian. Comenius's thought—and especially his religious reflections, rejecting all sectarianism—stems from the recognition that reality is always more than what we can say about it. Cartesianism and the vast edifice of modern science based upon it is, we might say, no more than a useful fiction. So, though, would "Comenianism" be. Both equally are useful fictions.

Fiction, though, implies a contrast with a "reality" and in this case, as in the case of speaking of God, the reality is always so vastly more than all we can say. Conceptions of reality, Cartesian or Comenian, are not so much convenient fictions as manners of speaking. It would be difficult to say that one is a more accurate description than the other, yet the choice between them is not a matter of indifference. Even if equally fictitious, they are not equally useful. One has brought us to the verge of an ecological catastrophe. The other, reflecting a basic respect for the integrity of all being, just might help all of us, trees, woodchucks, and humans, survive after all. Our manner of speaking of the last three centuries has proved destructive. Speaking to trees might enable trees—and, incidentally, humans—to survive.

Wherewith we return to our original question: When a philosopher speaks with a tree, what do they talk about? Are they discovering a hitherto hidden or long-forgotten truth—or are they forging a new, more promising manner of speaking, one that will help them both survive?

Somewhat surprisingly, most contemporary authors dealing with philosophical—or moral—ecology speak in a spirit of truly passionate Cartesian positivism, not at all in the spirit of Comenius's humility. Authors like Konrad Lorenz or Morris Berman appear entirely convinced that they are proclaiming the Truth with a capital T, that the conception they are presenting really is the long-suppressed true

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description of reality *an sich*. To writers like Berman, speaking to trees does not appear as a more adequate manner of speaking, as a more adequate mode of transaction between humans and the rest of nature. It is, he thinks, the long-suppressed truth.[12]

Just marginally, it might be worth noting that the long-ago opponents of this view, Marin Mersenne, Galileo Galilei, or Pierre Gassendi, whose sensitivity to the world of nature did not quite come up to that of Ed Meese with a chain saw, shared that conviction. Most of our biocentrically oriented thinkers are endlessly ingenious in metaphysical speculation but epistemologically quite uncritical: the conception of truth with which they operate is a positivist one of a faithful depiction of an external reality.

For that matter, contemporary anthropocentric writers do not appear to have learned in this respect since the days of Mersenne and Gassendi. They, too, less surprisingly but no less vehemently, present their claims not as a superior manner of speaking, a superior mode of transacting between humans and the world, but as the only true description of things as they really are. They are not content, for instance, to claim that speaking of farm animals as biomechanisms that feel no pain and have no agenda of their own fits the needs of the meat industry. Slave traders, too, were not content to claim that considering slaves as chattel simply fitted the needs of their business. They, too, firmly insisted that that was how things really were. Though most scientists have grown more cautious in presenting their hypotheses, ecological writers do not hesitate to make metaphysical claims in behalf of their respective assertions.

Such a dogmatically positivistic conception of truth as a faithful mirror image may well be one of the main reasons why contemporary ecological debates often seem so bootless. Positively and descriptively understood, the question about the place of humans in the cosmos seems incapable of being answered—simply because humans have *no* preassigned place. They are the beings who need first to create their place, to locate themselves.

This is a conclusion we can reach on purely biocentric and biological grounds, without dramatic "existentialist" proclamations about the putative absurdity of life. Biologically speaking, all we can say about the species *H. sapiens sapiens* is that it is an exotic species in the strict sense of that term, a species displaced from any natural environment and incapable of returning to one.[13]

That, to be sure, is not so little. Exotic animal species typically manifest a pronounced tendency to overpopulate and overfeed, with-

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out regard to need. The civilization which began as European and has become global has, in fact, encouraged both tendencies.

Still, it is not enough to enable us to say what the attitude of humans and their place in the cosmos ought to be. We can only recognize that humans have no "natural" place. There is no such thing as a natural human environment. Humans can be equally at home and are equally strangers in any environment, anywhere on the earth. Thus we cannot understand the question about our place in the cosmos as one of a description, as a question of "fact." It can only be a question about what would be desirable, not a question about finding a place but one about discovering a place.

Thus it is problematic to defend anthropocentrism or biocentrism—treating trees as raw material or treating them with respect—by insisting that one or the other is "true" in the sense of being a faithful mirror image of reality as it is *an sich*. Reality *in itself*, abstracted from all lived experience, could have no meaning. Meaning is a relational reality. Experiencing subjects are an intrinsic part of what reality is, even "in itself." We have the task of relating and the options of doing so as the sovereign masters of a storehouse of raw materials or as dwellers in a community of beings worthy of respect, living together in a respectful transaction. When, though, we opt for the one or the other, we are not choosing between truth and falsehood. We are, rather, choosing between two modes of speaking, one that heals and sustains, the other that hurts and destroys ourselves and our world alike. The world and our place therein are not meaningful—*or* "meaningless"—before we opt for a manner of speaking. They become so in the prism of metaphors, of manners of speaking, which then determine what will appear to us as natural and reasonable ways of acting.

Such a reading substantially simplifies the question about the place of the human in the cosmos. The bootless debates about whether humans "in reality" are this or that fade away, together with the debates about the world, whether it is "really" an aggregate of particles in mechanical motion or a community of respectful dwelling. A different question comes to the fore: What manner of speaking of humans and the world, what mode of transaction is most likely to lead to a sustainable and satisfactory dwelling of humans at peace with the world? How should we speak to trees, how should we treat the trees, other animals, and each other that all of us can live and live at peace? Here the answer to the question about the desirable manners of speaking seems as unambiguous as the answer to the question about the true image of reality was obscure.

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Yet for all that, such a reading runs up against a massive resistance on the part of anthropocentric and biocentric authors alike. That, in part, may be a matter of habit. For centuries, philosophy had clung to the dubious idea that physics is not an interpretation, a manner of speaking, but a positive description, and that philosophy is really "just like" physics, a positive description, albeit on a higher level. It clung to the conviction that its assertions, though perhaps not yet perfect, do aim at descriptive perfection and that they are and should be descriptions of a reality, be it empirical or eidetic, not interpretations. Physicists and metaphysicians alike resist the idea that the results of their efforts might be "mere" manners of speaking.

If a manner of speaking were really "mere," a fading shadow of a full-blooded "literal" description, the objection would be justified. But a literal description is also a manner of speaking—and a manner of speaking is anything but mere. Philosophers as different as Paul Ricoeur and Richard Rorty have long been pointing out that the descriptions we take to be literal are simply those that have grown so familiar that no one questions them, no matter how destructive they are. To call a being who lives, loves, feels pain and loyalty, cares, a "biomechanism" is an immensely destructive manner of speaking, yet it is one which we have come to consider a literal description: that is the way it is. There is nothing mere about that manner of speaking: it kills. Similarly, there is nothing mere about the opposite manner of speaking, speaking of animals as little persons in fur coats. It heals and sustains.

The choice facing us is simply not one between a literal description and a mere manner of speaking. Neither is what animals "really" are: reality is always what it is and vastly more than we can say about it. When we speak about it, it is always "in a manner of speaking." But the choice is not arbitrary. It is a choice not between two descriptions but between two courses of action—and, in that sense, between truth and untruth in a far more profound sense: between good and evil.

Between Good and Evil

That the truth is not a description is something we have learned to accept quite unproblematically when we speak of God. We know, surely, that no proposition about God can claim descriptive accuracy. God is neither a bearded old man nor an unmoved mover, neither Father Almighty nor a corresponding Mother. All those are manners

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of speaking about that profound reality that fills believers' lives. Yet none of them are "mere" and none are arbitrary. The reality they express is as basic as can be, and, given our cultural context, some express it while others obscure it. To speak of God as the Rock of my salvation is no more descriptively accurate than to speak of God as a great kohlrabi, yet, given our cultural context, the first conveys the experience, the second obscures it.

Nor are the manners of speaking that articulate the lived reality of our world either "mere" or arbitrary. Any conception of truth as a mirror image of reality, be it Hume's or Plato's, inevitably ends in skepticism before the plurality of viewpoints.

It is something quite different once we understand our truths not as mere descriptions but as real, active manners of speaking—really, modes of interacting with reality—which render our world meaningful and guide our actions therein. Here the relativity of personal preference falls by the wayside. There remains the reality that some manners of speaking create and heal, others harm and destroy. Our manners of speaking shape both our modes of perceiving and our modes of acting. We know how destructive the habits of speaking of the superman and of the inferior race proved in our dealing with humans. There is no reason to suppose it would be otherwise with our dealings with the rest of the natural world.

If, though, our actions are guided by our manners of speaking, are we not at the mercy of the habits of thoughts encoded in our very speech? Heidegger and Gadamer tell us that it is not we who speak through a language, but a language that speaks through us—*die Sprache spricht*. An ordinary speaker speaking of "jewing" someone out of a fair price may truly intend to say no more than that someone has been dishonestly deprived of his/her due. Yet, perhaps quite unintentionally and against his/her will, s/he has said something about Jews as well. Language has spoken through him/her. Similarly, when we speak of biomechanisms in meat production, we may mean nothing more than the raising of cattle. Yet language speaks through us and asserts something about the relation of humans and animals which then shapes our actions. Even without any ill intent, the terminology of technological ecology undermines what that ecology seeks to achieve.

Yet the reverse is possible as well. Language may speak through us, but we can speak through language as well. We can consistently reject the objectifying manner of speaking, we can insist on speaking not of "biomechanisms" but of nonhuman persons, not of ecosystems but of the environment of our shared lives.[14] We can say that animals are little

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persons in fur coats. It is no more—or less—descriptively accurate or inaccurate a description than speaking of biomechanisms. It does, however, constitute around us a rather different reality which, unlike the reality constituted by the anthropocentric metaphor, has some hope of a sustainable future.

With that, at long last, we can return to our original question of what is being talked about when a philosopher speaks to a tree. They are not exchanging factual information, but neither are they, Santayana-like, decorating a putative harsh reality with poetic gingerbread. Reality itself is neither harsh nor poetic; perhaps it is both or perhaps, "in itself," it is not at all. Truth, as Jaspers pointed out long ago, is in communication.

The point of speaking to a tree is communication. In recognizing the tree as part of a community of discourse, we are shaping acts and attitudes. The acts and attitudes shaped by the laconic metaphor of trees as mute and impersonal biomechanisms has brought us to the verge of an environmental catastrophe. The point now is to generate a manner of speaking which would be true to the task of sustainable dwelling at peace for humans and the world alike, a manner of speaking that would be true in the non-descriptive sense of being good. That, finally, is the truth they speak about when a philosopher speaks with a tree.

NOTES

1. Aldo Leopold, *A Sand County Almanack* (New York: Ballantine Books, 1966), 237–9. It might be useful to note that while Leopold is writing strictly about ethics, the rules of humans' interaction with each other and with the world, he is in effect raising a question of moral philosophy: what is the *summum bonum*, what ought humans strive for on this earth?
2. *Action for a Common Future* (Bergen: [Norwegian] Ministry of Environment, 1990), 15–26. At the conference in Bergen, the environmental ministers of European and North American countries adopted and recommended to their respective governments the idea of limiting consumption for the sake of sustainability. They reaffirmed that position a year later at the conference at Dobříš, Czechoslovakia (see *Environment for Europe* [Prague: Federal Ministry of Environment, 1991]). With that, their deliberations acquired a distinctly moral dimension. By contrast, the most recent report of the Club of Rome ignores the idea altogether and returns to an entirely technocratic and managerial approach (Alexander King and Bertrand Schneider, *The First Global Revolution*, Czech translation, *První globální revoluce*, trans. Jiří Nekola et al. [Bratislava: Bradlo, 1991]).

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3. Of late, several writers, including King and Schneider, have claimed that the West has solved the problem of overpopulation by making children an economic expense rather than an advantage. The claim has been understandably welcomed by the advocates of "growth" and of expanding economies. But do populations stabilize automatically when a certain level of consumption has been reached? Population in fact rose dramatically in the prosperous United States of the 1950s. And even if high consumption guaranteed stable populations, the latter might well come too late. Were the 80 percent of humankind who currently hover at the margin of survival (and who overpopulate) to start consuming at American levels, they would render the earth uninhabitable long before they reached the level at which populations are said to stabilize. Were we to make the maxim of ever-rising individual consumption a universal law, it would self-destruct. Thus the claim that the problem of overpopulation has been solved "in principle" by overconsumption seems dubious.
4. Morris Berman, *The Reenchantment of the World* (Ithaca: Cornell University Press, 1981) is a much-imitated classic of the genre whose emphasis is on self-discovery and reconnecting with the deep and perhaps nonrational side of our being. This theme has been much explored by writers like Arno Naess (for instance, "Sustainable Development and Deep Ecology," in J.R. and J.G. Engel, eds., *Ethics of Environment and Development* [London: Bellhaven, 1990], Gary Snyder, *The Practice of the Wild* [San Francisco: North Point Press, 1990]), and many others.
5. This is the orientation of classics like John Muir or Aldo Leopold and of naturalistically inclined ecologists in general. Neil Evernden, *The Natural Alien* (Toronto: University of Toronto Press, 1985), offers a thoughtful reflection on the approach. My own *The Embers and the Stars* (Chicago: University of Chicago Press, 1982) belongs in this category as well.
6. Hans Jonas, *The Imperative of Responsibility* (Chicago: University of Chicago Press, 1984), offers a noble example of such cultural ecology, King & Schneider a rather unfortunate one. My contribution here is *Homo moralis: o smysl života v zrdcadle dějin* (Praha: Nakladatelství J&J, 1992).
7. Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962); note especially concluding section, 277–9.
8. See Kohák, *The Embers and the Stars*, 110–23; elaborated upon in my "Speaking of Persons," *Personalist Forum* 7, no. 2 (Fall 1991): 41–58.
9. What is instrumentally good for another I am obliged to treat, in relation to me, as intrinsically good: I owe respect to a doll my daughter loves. Since value does not arise in the relation of two worthless entities, the existence of even instrumental value points to the reality of intrinsic value. See Erazim Kohák, "Why Is There Something Good, Not Merely Something?" *Journal of Speculative Philosophy* 5, no.6 (Dec 1991): 903–13.
10. Jan Patočka, "Cartesianism and Phenomenology," in Erazim Kohák, *Jan Patočka* (Chicago: University of Chicago Press, 1989), 285ff.

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11. There is extensive literature devoted to Comenius in Czech and German, notably Jan Patočka, *Die Philosophie der Erziehung des JAK* (Paderborn, 1971), and Milada Blekastad's detailed biography, *Comenius* (Oslo: Universitetsverlaget, 1969). Unfortunately, the little there is in English is devoted almost entirely to his pedagogical work. The one general introduction is by Jaroslav Pánek, *Comenius: Teacher of Nations* (Prague: Orbis, 1991) which, in spite of its sometimes idiosyncratic English, is a useful first step for anyone interested in these matters.
12. See "Politics of Consciousness" in Berman, 269–99. There is, among many "deep" writers, a tendency to suspect that their truth is being willfully suppressed by an evil conspiracy. Berman's approach is more measured: once we decide that what we want is domination and control, "Cartesian" views will prove the more effective. Thus the question is, once again, moral in the archaic sense: a question of the *summum bonum*.
13. Evernden, 108–22; other sociobiological writers like Gregory Bateson or Konrad Lorenz tend to agree.
14. That, interestingly enough, is the conclusion at which Richard Rorty arrives in spite of his earlier tendency to assume that if mentalism and a physicalism are both metaphorical, then the physicalist metaphor must be "literally" true. Cf. his profound reflection, "For a More Banal Politics," *Harper's*, (May 1992): 16–21.

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Stephen J. DeCanio

CARBON RIGHTS AND ECONOMIC DEVELOPMENT

Even in the absence of complete scientific consensus on the magnitude, timing, and regional distribution of the effects of global warming caused by greenhouse gas emissions, it is worthwhile to examine potential policy responses to the prospect of climate change. An internalization of the greenhouse externality based on property rights in carbon emissions offers the potential to promote rather than retard worldwide economic development. As the world economy moves in a market-oriented direction, the arbitrary wealth transfers associated with a carbon-rights distribution plan would dissipate within the time span required for planetary climate management. Thus, the present world situation may provide a new opportunity to reconcile the imperatives of global environmental protection and the promotion of sustained economic growth.

The costs and the benefits of reducing global greenhouse gas emissions are not yet known with any degree of confidence. Scientific consensus has not been achieved on the magnitude, timing, or regional distribution of the global warming caused by the release of carbon dioxide (CO_2) from burn-

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ing fossil fuels and from emissions of other trace gases, even though the basic scientific foundations of the greenhouse effect are not in dispute.[1] No firm economic benefit estimates can be calculated without a better understanding of the extent and consequences of global warming, although efforts are beginning to be made in this direction.[2] Estimates of the costs of reducing CO_2 and other greenhouse gas emissions are fraught with uncertainties as well. Not only must they rely on projections of energy demand decades into the future (always a dubious activity), but reliable cost estimates need to account for the path-dependence of technical change, a feature of the economic growth process only recently becoming recognized as central.[3]

The scientific issues are not likely to be settled in the immediate future. The long-term policy problem is further complicated by the fact that the world is presently at or near the peak of an interglacial warming period,[4] so that in the absence of human activity, the global climate would be on a course eventually leading to an ice age. A future ice age might be just as catastrophic as the most dire global warming scenarios.[5] Thus, current responses to potential global warming should be thought of as constituting only one element of a larger-scale planetary climate management policy that certainly will be needed in the future.

Strong arguments can be made for beginning to take steps now to restrict greenhouse gas emissions, despite the absence of scientific certainty. Some measures that will retard global warming are already being implemented for other reasons, and the rationale for such policies is reinforced by their effect on global warming.[6] Additional research resources surely should be devoted to all phases of the study of global climate change. It may also be wise to take further actions prior to arrival at a complete scientific consensus, because of the largely incalculable risk of conducting a potentially irreversible experiment affecting the habitability of the earth.

Even while undertaking such steps, it is worthwhile to examine alternative policies that could be used to address the problem more directly. How can a global *political* consensus be achieved to enact the greenhouse gas emissions restrictions that may be necessary? In particular, how can increasing the "scarcity" of certain basic energy resources (e.g., fossil fuels) be reconciled with the imperative need for worldwide economic development? Are any options available that are different from the commonly presented environment versus economy tradeoff?

I will argue that despite the potentially very large costs that would be associated with a reduction in carbon-based energy use, global climate management offers a new opportunity for promoting the cause of economic development throughout the world. A *market-based approach to the*

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management of climatic externalities can provide a natural platform for launching an unprecedented development initiative. Just as historical experience is establishing the truth of the proposition that liberal market institutions (property rights, freedom of exchange, competition) are necessary conditions for dynamic transformation of the material conditions of life, the creation of a new kind of property—"carbon rights"—could simultaneously protect the global environment while assisting developing countries in making the transition to sustained economic growth.

Correcting for Externalities

Before beginning the main body of the discussion, it is necessary to clarify the meaning of "externality" in the global context in which the term will be used here. Oddly enough, the very important contributions of Coase and the economists who have followed him have not dispelled the confusions surrounding the concept of externality.[7]

A *technological* externality (or just plain externality) exists when the productive activities of some economic agent or agents have a direct and negative effect on the productivity or utility of other agents, and the injured parties have no way of obtaining compensation from the producers of the externality. It is important in this definition that the negative effect of the externality is *direct* and not manifested only through market effects. For example, global warming caused by CO_2 emissions would reduce the utility and/or productive capacity of people throughout the world, regardless of its effect on the relative prices of commodities or assets. Although the adverse impact of a technological externality may have observable market consequences, the presence of market effects is *not* sufficient to identify a genuine technological externality.

Negative (and positive) market effects are much more common than technological externalities. In fact, to the extent that every economic decision influences prices in the "general equilibrium" (loosely defined as the set of processes determining the prices that are seen in the markets for traded goods and factors of production), *every* economic action is likely to have negative effects on some agents in the economy. The invention of electronic computers reduced the value of the capital and skills that had been devoted to producing and operating mechanical adding machines, and each successive generation of microchips has had a negative impact on the prices of previous generations of chips. These kinds of adverse price effects that derive from the dynamic of capitalist production and innovation are usually referred to as *pecuniary* externalities. Negative pecuniary externalities are not or should not be of particular policy concern; they are intrinsic to the process of economic growth. Thus, whenever there is a

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spillover from some economic activity that adversely affects other economic agents through the price system alone, no inference of a technological externality can or should automatically be drawn.

If every factor of production, that is, everything utilized in the production process, is someone's property, the actual costs of production will reflect the "social cost" of production, since the owners of all the productive inputs will have to be paid for their use. True technological externalities arise when property rights are incomplete. A classic example of a production externality is a factory that discharges toxic wastes into a nearby river.[8] If the river is unowned, the factory need not compensate anyone in order to dump its wastes. But the downstream users of the river are directly injured—the water may become unfit for human consumption, the number of fish harvested from the river may be reduced, or the recreational value of the river destroyed. The downstream users of the river are unable to require the factory to compensate them for these losses. Nothing forces the factory operators to take into account the cost of polluting the river as one of its "costs of production," so resources are misallocated from the perspective of social efficiency. There may be market effects that parallel the costs of the pollution—reduced land values, lower dollar output of fish, or a reduction in the value of recreational services utilizing the downstream water—but these market effects are only manifestations of the technological externality.

Coase's insight is that there are several ways to "internalize" technological externalities, all of which have the same consequences for economic efficiency (that is, for the allocation of resources to production). If there were no transactions, bargaining, or organizational costs preventing them from doing so, the various agents involved would be able to arrange a set of side payments that could bring about an optimal allocation of the levels of output and pollution. These payments might involve the victims paying the polluters to cease polluting, or the polluters compensating the victims for their damages. In the real world, however, it is only the existence of legally recognized *property rights* that enable such exchanges to be made, prices to be charged, and contracts to be enforced through the courts. Establishment of property rights (in conjunction with operation of the rule of law) can reduce transactions costs sufficiently to permit the efficient solution of externality problems without direct taxation or government regulation. An initial property-rights assignment has been shown experimentally to be necessary for bargaining to produce an efficient outcome.[9]

In the example of the factory polluting the river, the externality can be repaired by vesting either the factory or the downstream residents with property rights in the use of the water. Establishment of these rights

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means that, at best, all parties recognize the claims of the property holders for payment to use their resources as a matter of course, or at worst, that recourse to the courts becomes a relatively low-cost way to enforce full payment for the use of the resource. In either case, the operators of the factory will be led to include the cost of releasing the toxic byproducts in their profit-maximizing calculations.[10]

Policy is concerned not only with the achievement of society-wide economic efficiency, however. Equally important, from a political point of view, is the fact that the different ways property rights can be "completed" have very different consequences for the wealth of the individual economic agents involved. If downstream rights are given to the factory, its total profit will not be diminished by its polluting activities, for it can continue to discharge wastes without regard to their downstream effects. The factory can realize an even higher profit, however, by charging the downstream residents for use of the river and by adjusting its discharge of pollutants to maximize joint net revenue from output of the factory and river use charges.[11] If, on the other hand, the river rights are awarded to the downstream residents, the factory will reap lower profits (since it will now have to pay a charge for use of the river as a waste dump, or will have to cease disposing of its wastes in that manner altogether) while the downstream residents will receive some combination of monetary revenues (from the factory) and increased utility (from having a cleaner river). In either case, the amount of waste discharged into the river will be reduced (possibly to zero)—but the wealth of the factory owners and downstream residents will be quite different.[12]

What is true in this simple example of a local externality is true of the global externality of carbon dioxide emissions. Instead of a river, the resource being used for waste disposal is the atmosphere. The misallocation of resources occurs because the cumulative effect on the global climate of burning fossil fuels is not taken into account when the fuels are consumed. Their price is lower than it would be if the cost of the CO_2 emissions had to be paid by the fuel users. If the right to emit greenhouse gases into the atmosphere were "owned," anyone who wanted to burn fossil fuels would have to compensate the owners of those rights, and fossil fuel prices would increase accordingly, bringing about a reduction in their use and in the resulting CO_2 emissions.

The Economics of Atmospheric Carbon Rights

Government creation and protection of new environmental property rights is no longer merely a theoretical possibility. The trend in environmental protection, at least in the United States, has been very much in the

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direction of creating new forms of marketable assets to internalize environmental externalities. For some time, the U.S. Environmental Protection Agency (EPA) has permitted some emissions trading to allow air quality targets to be reached in the most cost-effective way. The compliance of the United States with the Montreal Protocol on Substances that Deplete the Ozone Layer was accomplished from the outset by the allocation of marketable CFC quotas. Marketable permits were embodied in the recently passed revision of the Clean Air Act in the United States. Tradeable CO_2 permits have been suggested to achieve emissions targets for the European Community as well as for accomplishing global reductions efficiently.[13]

There are no theoretical economic difficulties in envisioning a solution to the greenhouse gas emissions problem based on issuance of "carbon rights" that would be required to discharge CO_2 from the burning of fossil fuels. The real difficulties fall under three headings. First is the problem of *how much reduction* in CO_2 emissions would be globally optimal. Determination of this reduction target depends on further resolution of the scientific and economic uncertainties surrounding evolution of the world economy and climate. Second are what might be called *technical* difficulties—matters having to do with monitoring and enforcement (e.g., seeing to it that users of fossil fuels really did possess the requisite carbon rights), oversight of the market that would develop in carbon rights (to avoid fraud and false dealing), and administration of the system of creating and distributing the new rights.[14] These difficulties are formidable, but they will not be dealt with here. Instead, I wish to focus on the *political* opportunities and complications that would be associated with a carbon-rights system.

The central political issue is how the carbon rights would be distributed. The wealth that would be established in assigning carbon rights is large. As a first approximation, it would be equal to the difference between the market-clearing price of fossil fuels (including the price of the carbon rights) and the marginal cost of producing the fuels, multiplied by the total quantity of fuels consumed. It should be noted that the value of the carbon rights will be larger than the deadweight loss to the world economy due to the fossil fuel cutback.[15]

The political dilemma that would face those governments that wanted to implement a distribution of carbon rights would not be made easier by the fact that any assignment of rights would be arbitrary. Recall that the efficient outcome (equality between the private cost of burning fossil fuels and the social cost) will be obtained no matter who is given the carbon rights, provided the rights are tradeable and a market for them is able to operate. But it matters very much to the participants *who* receives these

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rights initially. One way to illustrate this is to imagine that the rights were given to the producers of the fossil fuels themselves. In this case, the cut in fossil-fuel output brought about by the limited distribution of carbon rights would have exactly the same effect as the formation of an effective cartel to reduce output and raise prices. Real-world cartels tend to break up because the individual members have an incentive to cheat, but a restriction of fossil fuel use enforced by limited issuance of carbon rights would achieve the kinds of energy price increases that OPEC oil ministers can only dream of.

At the other extreme, it would be possible to assign the carbon rights to the poorest of the developing countries. If this were done, the fossil fuel users in the industrialized countries would have to buy carbon rights from these developing nations. There would be a large transfer of wealth from the industrialized countries to the poor developing countries. Fossil fuel use would be curtailed, and global warming reduced, just as if the carbon rights were given to fossil fuel producers. Either distribution of carbon rights could be in the net interest of the residents of the industrialized nations, depending on the benefits of avoiding global warming. But the political consequences of these two polar cases would be vastly different because of the different distributional patterns implied.

Moving back a logical step, in any market economy the distribution of wealth and income depends on the pattern of ownership of property rights prevailing at any given moment. Why should the arbitrary assignment of carbon rights be different from the established distribution of ordinary property rights in land, stocks, bonds, patents, licenses, and other traditional assets? How, after all, did the present owners of property in a market economy come by their rights? Human capital is not traded in the market as property, so let us confine the discussion to tangible property. All tangible property was either purchased from previous owners or was produced using inputs purchased from previous owners. How did the previous owners obtain title? By purchase from owners before them. Carrying this process backward in time, it can be seen that at some prior point in history, the "original" property rights were assigned *arbitrarily*, either through centralized edict or decentralized appropriation. In the case of land, it is very easy to see that the "initial" assignment (that is, the assignment that is the starting point for a valid title search carried out today) must have taken one of those two arbitrary forms. Even if some sort of Lockean appropriation principle could be applied to generate a legitimate initial ownership of land based on first use, a clear title derived from the Lockean initial appropriation is now impossible to establish, because the identity of the original appropriator is lost in the mists of prehistory. For all practical purposes, possession of land can be traced back to edicts

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issuing from conquest, custom, or some other form of arbitrary assignment.

Contemporary examples of property creation by arbitrary assignment of rights are common. For instance, the U.S. government awards segments of the electromagnetic spectrum to proprietors for broadcasting. Offshore tracts are defined by the government and then auctioned to companies who bid for the right to drill for and extract oil and gas from them. Changes in regulatory practice can create and define rights to airport takeoff and landing slots which are then bought and sold by airlines. In these cases and others, the definition, assignment, and enforcement of private property rights can be traced back to government action.

Capitalist Wealth Redistribution

A moral argument for capitalism can be derived from the fact that in a voluntary exchange, both parties' welfare is increased. Given any initial assignment of property rights, subsequent voluntary exchanges will improve the welfare of the transacting parties. But regardless of the validity of this moral claim, one consequence of the voluntary exchange process is that *the eventual distribution of property ownership in a market economy free of state interference is independent of the initial distribution of ownership*. Not only will the aggregate characterizations of ownership (as represented by the Gini index of wealth distribution, or the proportions of wealth held by any particular percentile of the distribution) be independent of the original ownership pattern, but the identities of the wealth holders will be independent of the wealth position of their ancestors at the time of the original arbitrary assignment of property rights.

The basis for this remarkable conclusion is that a well-functioning market economy exhibits extensive social and economic mobility. Individuals (and their offspring) have continuous opportunities to move up the social scale because of their freedom to engage in transactions that they judge will improve their well-being. Downward mobility is also a possibility, of course, since individual abilities are only partially transmitted across generations, and because market conditions can change, rendering previously valuable capital (both human and tangible) obsolete.

In simple mathematical models of social mobility in which the probabilities of moving from one wealth state to another are stable over time, it is even possible to calculate the ultimate equilibrium distribution of wealth and compute how long it will take for the effects of an initial arbitrary assignment of wealth to be entirely dissipated. These points can be illustrated by a simple numerical example. This example is not intended to be a strictly realistic description of the possibilities for global economic mobil-

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ity. Rather, the point is to illustrate the powerful effect of intergenerational mobility in overwhelming the legacy of any particular initial distribution of wealth.

A transition matrix represents the probabilities for mobility across class boundaries from one generation to the next. Probabilities based on U.S. data are given in Table 1, but transition matrices illustrating the same pattern have been found for other market economies.[16]

The probability that the descendant of a lower-class parent[17] will also be in the lower class is .463; the probability that the descendant of a lower-class parent will wind up in the upper class is .197.[18] If L_0, M_0, and U_0 are the initial proportions of the population in the three classes, then the proportion of first-generation offspring that will be in the lower class (L_1) is given by

$$L_1 = .463\ L_0 + .256\ M_0 + .164\ U_0; \tag{1}$$

the proportion of first-generation offspring that will be in the middle occupational class (M_1) is

$$M_1 = .340\ L_0 + .364\ M_0 + .242\ U_0; \tag{2}$$

and the proportion of first-generation offspring that will be in the upper class (U_1) is

$$U_1 = .197\ L_0 + .380\ M_0 + .594\ U_0. \tag{3}$$

It should be noted that the columns of Table 1 add up to one, a reflection of the fact that all the offspring have to end up in some class. On the other hand, the rows are not required to sum to one.

Since these transition probabilities were derived from U.S. data, it is to be expected that they show a high degree of intergenerational mobility. It is most likely that the children of parents in a particular class will remain in that class, however, and that the advantages bestowed by the upper class

Table 1: Representative Transition Probabilities

		Parent's Class		
		Lower	*Middle*	*Upper*
Offspring's Class	*Lower*	.463	.256	.164
	Middle	.340	.364	.242
	Upper	.197	.380	.594

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on their offspring are the greatest. (The probability that upper class offspring will remain in the upper class is .594.)

Now suppose that an arbitrary redistribution of wealth were to befall the market economy described by the transition matrix of Table 1, a redistribution that created a small upper class and very large lower class, with the middle class wiped out. Alternatively, suppose an initial assignment of wealth was made in which a small fraction of the emerging society obtained the lion's share of the wealth initially, but that economic and social mobility as described by Table 1 prevailed thereafter. The initial conditions of wealth ownership could be represented numerically by proportions of the population in each group at time zero, say $L_0 = .8$, $M_0 = 0$, and $U_0 = .2$. What would the wealth distribution of successive generations look like?

The calculations are a matter of simple arithmetic. The first generation proportions (from expressions (1)–(3) above) would be $L_1 = .403$, $M_1 = .320$, $U_1 = .276$; the second generation proportions would be $L_2 = .314$, $M_2 = .321$, $U_2 = .365$. After only two generations, the highly inegalitarian initial distribution would have become quite smooth. It is also possible to calculate the ultimate equilibrium distribution in this example. The equilibrium distribution is defined as the distribution such that the proportions of the population in each group remain constant from generation to generation. It is easy to show that these self-replicating proportions are $L^* = .274$, $M^* = .306$, and $U^* = .420$. If the distance of the ith generation from the equilibrium wealth distribution is measured by the natural metric

$$(4) \qquad d = A\,[(L^* - L_i)^2 + (M^* - M_i)^2 + (U^* - U_i)^2]^{1/2}$$

and the distance is scaled (by setting A) such that the initial distribution is 100 percent distant from the equilibrium distribution, then it follows that after only two generations the wealth distribution would have moved 89 percent of the way to its equilibrium. In other words, in the example shown here, the effects of the initial distribution of wealth are almost entirely dissipated after only two generations. For an economy with the economic and social mobility exhibited in Table 1, the arbitrariness (or injustice) of any initial wealth assignment is quickly overcome.

It hardly needs to be pointed out that real-world economies may not converge so quickly to a distribution of wealth independent of their initial conditions. Artificial, non-market barriers to economic and social mobility, such as racial discrimination, unequal inheritance rules, occupational licensing, or heavy taxation may retard the process of wealth equilibration.[19] Of course, the equilibrium wealth distribution is not static; interclass mobility continues with each generation after the self-replicating

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aggregate distribution has been reached. But after enough time, the probability that a particular individual will be in any given wealth class depends only on the equilibrium probabilities and not on the initial situation of the individual's distant ancestors.

At the same time, there are other factors tending to increase the irrelevance of the initial wealth distribution as time passes. The transition probability model described above pertains only to the relative wealth position of individuals in each generation. If the economy is growing at a steady rate, the absolute wealth of even those individuals in the lower strata will be increasing over time. Given that an economic system based on voluntary exchange promotes the growth process, a market-oriented economy will tend to improve the circumstances of individuals throughout the income distribution.

Other transition matrices would converge to their equilibria at different rates. It is clear, however, that transition matrices estimated empirically from a wide range of market economies all have the property that the effects of the initial distribution of wealth die out over time.[20] A lengthy period of voluntary exchanges in the context of well-defined property rights is sufficient to establish a high degree of independence of the observed distribution of property from whatever its initial conditions were.[21]

These considerations have direct application to the distribution of carbon rights. No one would argue that the world economy exhibits the same degree of economic and social mobility as the stable capitalist democracies. Nevertheless, real per capita income growth has become quite pervasive in the developing world over the past few decades.[22] In addition, the collapse of Communism has been accompanied by a wave of liberalization that has shifted economic policy in a free-market direction. This trend should have the effect of enhancing economic growth and upward mobility throughout the world.

From this perspective, the most important feature of any arbitrary distribution of carbon rights (in addition to its success in curbing greenhouse gas emissions) is whether it would tend to accelerate economic growth over the long run, not what its initial effect on global wealth distribution would be. If the transition to a dynamic market economy is made successfully by most countries, the effects of the initial distribution of carbon rights would die out after not more than a few generations. Internalization of the CO_2 externality, like any arbitrary assignment of property rights, could be accomplished without creating any more than a temporary blip in the overall distribution of wealth. The political opportunity offered by a carbon rights distribution formula favoring developing countries is that it could help reconcile the short-term differences between the rich and poor

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countries by serving the long-term interests of both groups. It should never be overlooked that the developed countries have a strong stake in the progress of the poorer nations, because industrialized nations benefit far more from their trade and exchanges with other prosperous nations than from their meager dealings with impoverished ones.

The Politics of Distributing Carbon Rights

Even though the wealth distribution effects that would follow an initial arbitrary assignment of carbon rights are transient, it does not follow that it makes no difference at all how the rights are assigned. There are two avenues by which the rights assignment might be a useful policy tool: (1) to achieve worldwide agreement to embark on the climate management project, and (2) to jump-start the development of some of the world's more intractable cases of economic stagnation. Consider these possibilities in turn.

The biggest stumbling block to effective worldwide environmental protection is the problem of free riders. In the absence of any global political authority, environmental goals can only be reached through international negotiation and agreement. Achieving unanimous agreement is difficult, particularly since environmental protection (internalizing the externalities that arise when the atmosphere is used as a waste dump) requires increases in the relative prices of important growth-related inputs. The poorer countries are justifiably reluctant to take actions that might slow their economic progress.

Yet this tension between development and environmental protection can be transformed into a positive force. The recent experience in negotiating and modifying the Montreal Protocol illustrates the possibilities. The original Montreal Protocol (signed in September 1987) contained provisions making it easier for low-income countries to comply with its provisions. These included a ten-year "grace period" before reductions in ozone-depleting substances began and allowing for some increase in consumption of those chemicals before the cutbacks were imposed.[23]

When the Montreal Protocol was revised in London in 1990 and the control measures were made more stringent (to the point of a complete phaseout of ozone depleters, not just percentage reductions), it was recognized that without the participation of the large developing countries (such as India and China) the control efforts of the industrialized countries ultimately would be ineffective. So in order to induce all countries to join, an international fund was set up to assist developing countries in making the transition away from ozone-depleting technologies. Although the sums set aside in this fund were modest (and quite small relative to reve-

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nues that are being or could be raised by assigning CFC rights to the governments of the producing countries), the success of the London negotiation demonstrates that the principle of using wealth transfers to reach global consensus is workable.[24] The transfers were not so large as to rob the citizens of the industrialized nations of the benefits of preserving the ozone layer, nor were they so small that the developing countries would find it irresistibly attractive to be free riders.

Fossil-fuel burning currently produces atmospheric carbon emissions (in the form of CO_2) of approximately 5.9 billion metric tons per year.[25] Total world expenditures on fossil fuels were approximately $490 billion in 1988.[26] The latter figure can be used to obtain a rough estimate of the total value of carbon rights sufficient to cause a small reduction in total carbon emissions. If enough carbon rights were created so that fossil fuel use were reduced by 5 percent, a plausible approximate range for the value of the carbon rights would be between $20 billion and $50 billion per annum, depending on the elasticities of demand and supply of the different fossil fuels.[27]

The total value of carbon rights consistent with a small reduction in CO_2 emissions is thus comparable in order of magnitude to current levels of foreign aid. Official international development assistance in 1988 was $51 billion.[28] The value of the carbon rights is somewhat larger than the amount of money that would be raised under the Brundtland Plan in which each nation would set aside .1 percent of its GNP for an International Fund for the Atmosphere. The Brundtland Plan would raise only about $16 billion per year.[29] The actual size of the transfer under the carbon rights plan would depend on the magnitude of the CO_2 emissions reduction it mandated as well as the manner in which the rights were distributed, and these parameters would be subject to both scientific input and international negotiation. Also, it is not by any means necessary that this entire transfer be made from the industrialized countries to the developing countries. The richer countries could utilize the portion of the carbon rights allocated to them to mitigate the effects of fossil fuel price increases at home.[30] Even with these qualifications, the size of the transfers would be large enough to make a dent in the world development problem (provided the funds are not dissipated in useless projects), but it would not be so huge as to dominate the potential benefits of avoiding global warming that the citizens of the developed countries would be seeking to realize.

The discussion so far has not addressed the mechanism for distribution of carbon rights *within* recipient countries. Even if governments were the primary recipients, different governments might choose to allocate the rights among their citizens in various ways. Anything from a straight per capita distribution to use of the rights as a source of government finance

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can be imagined. Even if the recipient governments retained the rights for themselves, the flow of revenues could enable tax reductions that would lessen tax-induced distortions. While it is unrealistic to presume that international negotiations concerning the assignment of the rights could address directly the policies of the recipient governments, it is likely that a great deal of scholarly, journalistic, and political attention would be paid to the question of what kinds of internal distribution plans would offer the greatest impetus to development. Presumably neoliberals in the recipient nations would agitate for the proceeds to be distributed to individual inhabitants rather than to governments, and one can even imagine the failure of governments to distribute proceeds to be a rallying point for democratic opposition forces. Such pressures could also compel recalcitrant governments to sign onto the project by making their citizens the potential recipients of a major financial windfall.

Carbon Rights Are Not a Panacea

Nothing in the discussion so far should be interpreted as asserting that wealth transfers are indispensable to speed the poor countries of the world along the path to economic development. On the contrary, infusions of external capital (whether through aid or direct investment) are not a sufficient condition to guarantee economic growth. More important are forms of social organization that both allow for economic and scientific experimentation and that permit rewards for success.[31] Nevertheless, given conditions favorable to economic growth, the availability of investment funds is surely a facilitating factor in making the transition from a poor to a rich economy. External debt relief, particularly if the debt had been incurred for wasteful expenditures by undemocratic predecessor governments, would have a growth-promoting effect, as would infrastructure creation and enhancement.

That said, it is worth repeating that the main features of the carbon rights transfer plan being considered here are political. The wealth embodied in the carbon rights would provide both industrialized and developing countries negotiating room for sharing the burdens of forestalling global warming. Developing countries could be compensated for incurring costs associated with reducing greenhouse emissions. By translating the redistribution resulting from fixing the CO_2 externality into a property instrument, the emotionally charged distinction between donors and recipients of foreign aid could be defused. And behind all these considerations is the underlying imperative that only if the world succeeds in obliterating mass poverty will it be possible to afford and coordinate rational planetary climate management.

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Another advantage of the carbon-rights approach is that by transforming the reduction in greenhouse gas emissions into a marketable asset, rather than attempting to set phasedown targets or impose direct controls, countries or regions that had taken independent action to reduce emissions would not be disadvantaged. The price of fossil fuels would reflect the cost of the CO_2 emissions (provided the appropriate reduction target was set), and countries or individuals that had taken conservation steps would be rewarded rather than penalized for their foresight.

In a regulatory phasedown program, the cheapest and easiest reductions are carried out first. A country or region that has already, say, unilaterally reduced CO_2 emissions by 10 percent would face higher costs for a negotiated 20 percent across-the-board reduction than a country that had made no previous reductions. This inequity would not plague the carbon-rights plan. With carbon rights required to burn fossil fuels, a country that had reduced usage by 10 percent would face a smaller carbon-rights bill than a country that had made no reductions. Thus unilateral actions (which seem likely to be made for domestic political reasons in the EC and perhaps the United States) would not be penalized.

The international experience in protecting the stratospheric ozone layer again is instructive. The United States and a few other countries banned CFCs in most aerosol applications in the late 1970s, thereby achieving a reduction in consumption of approximately one-third. Concern by the U.S. CFC industry about a level playing field became an issue when negotiations leading to the Montreal Protocol were under way, since the proposed pact called for percentage reductions in CFC use, but did not credit the United States or other countries with the reductions they had already made.[32]

Is a Carbon-Rights Solution Utopian?

The mechanism proposed above may seem unrealistic. Myriad practical problems would have to be solved, even if international agreement on the general principle could be reached. Would the agreement itself specify whether the carbon rights would be distributed to governments or directly to individuals? (And if to individuals, who would supervise how it was to be done?) At what stage would the carbon rights be required to be attached to the fossil fuels, and how would that requirement be enforced? What would be the lifespan of the rights? Flexibility in setting the CO_2 reduction targets is desirable because of probable future shifts in the scientific assessment of the problem, yet longevity of the property rights is necessary if the mobility effect is to have enough time to counter the arbitrariness of the initial assignment of rights.

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Despite these practical difficulties, the promise of the present historical moment should not be underestimated. For all its shortcomings and disappointments, the 1992 UNCED conference in Rio de Janeiro demonstrated nearly universal agreement on the need to reconcile global environmental protection with developing countries' aspirations to increase their standards of living. The ozone agreements in Vienna (1985), Montreal (1987), and London (1990) have shown that a very high degree of international cooperation can be achieved in this effort. Many of the facets of the carbon rights assignment plan are visible in embryonic form in the international ozone-protection technology transfer fund set up in London. The United Nations Environment Programme was able to serve as clearinghouse, organizer, and mediator in the ozone negotiations, and the process was relatively free of nationalistic or ideological hostilities. Creating carbon rights and allowing a market in them to emerge would avoid the monopoly and sovereignty problems that might be associated with creation of a single world atmospheric regulatory agency. The nations of the world are sufficiently diverse, and under any feasible assignment scheme the carbon rights would be so widely dispersed, that no cartel-like control of the carbon-rights market could be achieved by any group.

The post-Cold War world presents a new political situation. Reduction in the level of great-power tensions promises the possibility of an important shift in policy emphasis. In the absence of military pressures from other great powers, the main threats to national security will be from terrorism, localized aggression, and environmental catastrophe. It is not beyond the realm of possibility that great-power cooperation, whether through the U.N. Security Council or through the exercise of regional influence, will attenuate the security threats from terrorism and from aggressive small countries. Similarly, it may be that political consensus can be forged from scientific input with regard to global environmental protection.

To implement planetary climate management, the most efficient approach would be to make the market prices of energy inputs reflect true social costs. Both the historical success of the capitalist economies in producing material goods, and the recent overwhelming manifestation of popular preference for societies based on consent and exchange, reinforce the conclusion that markets should be used to organize production whenever possible. It is perhaps a stroke of undeserved good fortune that humanity has arrived at this conclusion at the very moment in history when global environmental externalities have come to the forefront of the political stage. A property-rights, market-oriented solution to the problems of ozone depletion, global warming, and other worldwide environmental issues offers a unique opportunity to help rather

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than hinder the institutionalization of self-sustaining economic growth across the globe.

NOTES

1. A starting point for understanding the present state of scientific knowledge about global warming is the three-volume report of the Intergovernmental Panel on Climate Change: *Scientific Assessment of Climate Change* (report prepared for IPCC by Working Group I); *Potential Impacts of Climate Change* (report prepared for IPCC by Working Group II); and *Formulation of Response Strategies* (report prepared for IPCC by Working Group III) (United Nations: WMO and UNEP, June 1990). See also, e.g., Richard A. Houghton and George M. Woodwell, "Global Climate Change," *Scientific American* 260, no. 4 (April 1989): 36–44; Stephen H. Schneider, "The Greenhouse Effect: Science and Policy," *Science* 243, no. 4892 (February 10, 1989): 771–9; Philip D. Jones and Tom M. L. Wigley, "Global Warming Trends," *Scientific American* 263, no. 2 (August 1990): 84–91; "The Once and Future Weather," *Economist*, April 7, 1990: 95–100; Pieter P. Tans, Inez Y. Fung, and Taro Takahashi, "Observational Constraints on the Global Atmospheric CO_2 Budget, *Science* 247, no. 4949 (March 23, 1990): 1431–8; Andrew C. Revkin, "Endless Summer: Living with the Greenhouse Effect," *Discover* 9, no. 10 (October 1988): 50–61; William K. Stevens, "Skeptics Are Challenging Dire 'Greenhouse' Views," *New York Times*, December 13, 1989: A-1, A-18; V. Ramanathan, L. Callis, R. Cess, J. Hansen, I. Isaksen, W. Kuhn, A. Lacis, F. Luther, J. Mahlman, R. Reck, and M. Schlesinger, "Climate-Chemical Interactions and Effects of Changing Atmospheric Trace Gases," *Reviews of Geophysics* 25, no. 7 (August 1987): 1441–82; T. A. Heppenheimer, "Keep Your Cool," *Reason* 21, no. 8 (January 1990): 22–7; and Robert C. Balling, Jr., *The Heated Debate: Greenhouse Predictions versus Climate Reality* (San Francisco: Pacific Research Institute for Public Policy, 1992). This brief but varied list could be expanded at great length. It should be noted that crucial information will be obtained by historical and paleoclimatological studies as well as work on computer forecasting models. Knowledge of the causes and magnitudes of the natural variations in climate is likely to be as valuable as improvements in model forecasts. See, for example, Wallace S. Broecker and George H. Denton, "What Drives Glacial Cycles?" *Scientific American* 262, no. 1 (January 1990): 49–56.
2. William R. Cline, *The Economics of Global Warming* (Washington: Institute for International Economics, 1992); William D. Nordhaus, "The '*Dice*' Model: Background and Structure of a *D*ynamic *I*ntegrated *C*limate-*E*conomy Model of the Economics of Global Warming," Cowles Foundation Discussion Paper No. 1009 (New Haven: Cowles Foundation for Research in Economics at Yale University, February 1992).
3. W. Brian Arthur, "Competing Technologies, Increasing Returns, and

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Lock-in by Historical Events," *Economic Journal* 99, no. 394 (March 1989): 116–31; Paul A. David, "CLIO and the Economics of QWERTY," *American Economic Review* 75, no. 2 (May 1985): 332–7; Robin Cowan, "Nuclear Power Reactors: A Study in Technological Lock-in," *Journal of Economic History* 50, no. 3 (September 1990): 541–67; but see S. J. Liebowitz and Stephen E. Margolis, "The Fable of the Keys," *Journal of Law and Economics* 32, no. 1 (April 1990): 1–25, for a skeptical view.

4. "The Once and Future Weather," 100.
5. During the most recent ice ages, "the ice sheets reached thicknesses of several kilometers; they planed, scoured and scarred the landscape as far south as central Europe and the midwestern U.S." Broecker and Denton, n2 above, 49.
6. These policies include the encouragement of profitable energy-saving investments, removal of energy price controls, and the phaseout of the chemical substances (CFCs, halons, etc.) known to deplete the stratospheric ozone layer and which are themselves powerful greenhouse gases. The net effect of the phaseout of CFCs on global warming is unclear, however, because the stratospheric ozone these substances destroy is itself a greenhouse gas. See the "Synthesis of the Reports of the Ozone Scientific Assessment Panel, Environmental Effects Assessment Panel, Technology and Economic Assessment Panel," prepared by the Assessment Chairs, for the Parties to the Montreal Protocol (New York: United Nations, November, 1991).
7. R. H. Coase, "The Problem of Social Cost," *Journal of Law and Economics* 3, no. 1 (October 1960): 1–44; Carl J. Dahlman, "The Problem of Externality," *Journal of Law and Economics* 22, no. 1 (April 1979): 141–62; Elizabeth Hoffman and Matthew L. Spitzer, "The Coase Theorem: Some Experimental Tests," *Journal of Law and Economics* 25, no. 1 (April 1982): 73–98.
8. An extended discussion of this example is given in Hugh H. Macaulay and Bruce Yandle, *Environmental Use and the Market* (Lexington, Mass.: Lexington Books, 1977). They also discuss the role of property rights and asset pricing in solving a wide range of environmental problems. The solution of environmental externalities through creation of property rights is explored in detail in J. H. Dales, *Pollution, Property and Prices* (Toronto: University of Toronto Press, 1968).
9. Glenn W. Harrison and Michael McKee, "Experimental Evaluation of the Coase Theorem," *Journal of Law and Economics* 28, no. 3 (October 1985): 653–70.
10. It is not sufficient for economic efficiency that clear liability rules be established, because liability rules do not rule out inefficient entry to take advantage of wealth transfers. Liability rules are an incomplete form of property rights, and as such are not equivalent to the kind of property assignment being considered in the text. For a complete discussion, see H. E. Frech, III, "The Extended Coase Theorem and Long Run Equilibrium:

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The Nonequivalence of Liability Rules and Property Rights," *Economic Inquiry* 17, no. 2 (April 1979): 254–68.

11. The discussion here abstracts from potential monopoly or small-number problems among the transactors. Competition in pricing is assumed throughout, to focus the discussion on the repair of the externality problem. The monopoly issue should not be ignored in practical policy design, however. See, e.g., Mancur Olson's "Does Nature Need a Landlord?," his review in *New York Times Book Review* (May 13, 1990) of *The Yellowstone Primer: Land and Resource Management in the Greater Yellowstone Ecosystem*, ed. John A. Baden and Donald Leal (San Francisco: Pacific Research Institute for Public Policy, 1990). The monopoly problem will be addressed in the discussion below.
12. A Pigouvian tax on the emitted pollutants internalizes the externality in a similar way by requiring the factory to pay a tax on its emissions. Allocative efficiency can be achieved because the factory operators are required to include the cost of pollution in their factor allocation decisions (because the tax raises the cost of waste disposal). In this case, the "property right" to the river inheres in the government.
13. Council of Economic Advisers, *Annual Report of the Council of Economic Advisers* (Washington, D.C.: Government Printing Office, January 1987), and *Annual Report of the Council of Economic Advisers* (Washington, D.C.: Government Printing Office, February 1990); Environmental Protection Agency, "Protection of Stratospheric Ozone," 40 CFR, Part 82, *Federal Register*, August 12, 1988: 30566–602; Paul R. Portney, "Policy Watch: Economics and the Clean Air Act," *Journal of Economic Perspectives* 4, no. 4 (Fall 1990): 173–81; Robert W. Hahn and Gordon L. Hester, "Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program," *Yale Journal on Regulation* 6, no. 1 (Winter 1989): 109–53; "Warm World, Cool Heads," *The Economist*, October 27, 1990: 13–14. See also Kikuo Iwata, "The Tough Price We Must Pay to Preserve Our Environment," *The Japan Times*, November 12–18, 1990: 12–13, which proposes marketable carbon dioxide coupons distributed to countries according to their populations and forest resources. An excellent scholarly treatment of a tradeable carbon emissions permits plan is given in Michael Grubb, "The Greenhouse Effect: Negotiating Targets," *International Affairs* 66, no. 1 (1990): 67–89. A theoretical study by Joshua M. Epstein and Raj Gupta, *Controlling the Greenhouse Effect: Five Global Regimes Compared* (Washington, D.C.: The Brookings Institution, 1990), concludes that a market in global emissions permits is the most promising of the five policy mechanisms considered. See also the study initiated and sponsored by Senators Timothy Wirth and John Heinz, *Project 88/Round II, Incentives for Action: Designing Market-Based Environmental Strategies* (Washington, D.C., May 1991), and the references contained therein.
14. Monitoring and enforcement issues are treated by Clifford S. Russell,

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Winston Harrington, and William J. Vaughan, *Enforcing Pollution Control Laws* (Washington, D.C.: Resources for the Future, 1986); and David G. Victor, "Limits of Market-Based Strategies for Slowing Global Warming: The Case of Tradeable Permits," *Policy Sciences* 24, no. 2 (May 1991): 199–222.

15. The deadweight loss from the CO_2 emissions restriction is measured by the fall in consumers' and producers' surplus in fossil fuel markets following the limitation. This is separate from the benefits of reducing global warming, of course.
16. The example given here is adapted from Valentino Dardanoni, "Welfare Ranking of Social Mobility Matrices," University of California, San Diego, Discussion Paper 90–18 (May 1990). Dardanoni drew on the empirical work of (among others) D. L. Featherman and R. M. Hauser, *Opportunity and Change* (New York: Academic Press, 1978). The transition probabilities pertain to the United States, circa 1973. Nancy A. Jianakoplos and Paul L. Menchik, in "Wealth Mobility in the United States," Econometrics and Economic Theory Paper No. 9009 (East Lansing: Michigan State University, Department of Economics, 1991), report transition matrices for *intra*generational wealth mobility, but also give references to other studies of intergenerational mobility. In addition, see A. B. Atkinson, "On intergenerational income mobility in Britain," *Journal of Post Keynesian Economics* 3, no. 2 (Winter 1980–81): 194–218, and the studies cited in the references of n21 below.
17. The original work by Featherman and Hauser is based on occupational categories, rather than wealth categories, and is reported in terms of intergenerational mobility between fathers and sons. There is considerable overlap between between wealth and occupation, and the intergenerational transition from fathers to sons captures a good portion of the mobility experience across generations. Cross-class intermarriage is, however, one of the important determinants of intergenerational mobility, because the relevant unit for placement in a society's wealth distribution is the household. For these reasons, the transition probabilities of Table 1 are labeled "representative," not actual. Probabilities from an empirical study were used in the text calculations to highlight the fact that mobility of this extent is observed in market settings.
18. Strictly speaking, this probability interpretation is correct only for a population unchanging in size. If the population size changes, then the entries in the table should be interpreted as *proportions* of the offspring of fathers in a particular class who end up in a particular class.
19. For an historical example, see Stephen J. DeCanio, "Accumulation and Discrimination in the Postbellum South," *Explorations in Economic History* 16, no. 2 (1979): 182–206. F. A. Hayek has pointed out in *The Constitution of Liberty* (Chicago: Henry Regnery Company, 1960, 321) how progressive taxation can reduce economic and social mobility by placing a proportionally heavier burden on extraordinarily remunerative activities and risk

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taking. Government tax and expenditure policies may also have an immediate redistributive effect, and as such can directly influence the equilibrium wealth distribution.

20. Many of the empirical transition matrices reported in the literature (not reviewed here) show transition probabilities between deciles, quartiles, or quintiles of the income distribution. These matrices all show the degree of interclass mobility required for dissipation of the effects of the initial distribution, but of course they cannot be used to illustrate numerically the speed of the movement from an initial wealth assignment to an aggregate equilibrium distribution, because in each generation there will be one-tenth of the population in each decile, one-fourth in each quartile, etc.

21. Transition matrices having the property that the wealth distribution converges to a long-run equilibrium that depends only on the transition probabilities and not on the initial distribution are called *ergodic*. See William Feller, *An Introduction to Probability Theory and Its Applications*, 3rd ed., vol. 1 (New York: John Wiley & Sons, 1968); A. F. Shorrocks, "Income Mobility and the Markov Assumption," *Economic Journal* 86, no. 343 (September 1976): 566–78; and Kaare Svalastoga, *Prestige, Class, and Mobility* (Copenhagen: Gyldendal, 1959). First-order Markov models of the type illustrated in the text have the mathematical properties that (a) future status depends only on current status, not the status of past generations; (b) the transition probabilities do not change over time, and (c) the same transition probabilities apply to all members of the population. Obviously, these are strong assumptions not likely to be strictly satisfied in the real world (see Jianakoplos and Menchik), although deviations from the assumptions may not have much of an effect on the form of the equilibrium distribution (see Shorrocks). More important, however, is that the purpose of the model is *to illustrate the importance of social and economic mobility (and associated market institutions) in the evolution of the wealth distribution*, not to describe in precise numerical terms the actual equilibrium distribution. The "rhetorical" purpose of such models in economic discourse has been much misunderstood, but essential clarification is provided by Donald N. McCloskey, *The Rhetoric of Economics* (Madison: University of Wisconsin Press, 1985).

22. Country-by-country per capita real output growth rates can be computed from the data reported in Robert Summers and Alan Heston, "The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1950–1988," *Quarterly Journal of Economics* 106, no. 2 (May 1991): 327–68.

23. United Nations Environment Programme, "Montreal Protocol on Substances that Deplete the Ozone Layer," Final Act (1987), Article 5.

24. Richard Elliot Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet* (Cambridge, Mass.: Harvard University Press, 1991); Stephen J. DeCanio and Kai N. Lee, "Doing Well by Doing Good: Technology Transfer to Protect the Ozone Layer," *Policy Studies Journal* 19, no. 2 (Spring 1991): 137–48.

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25. This calculation is based on annual consumption figures from United Nations Department of International Economic and Social Affairs, *1987 Energy Statistics Yearbook* (New York: United Nations, 1989), and carbon dioxide emissions by fuel from Gregg Marland, "Carbon Dioxide Emission Rates for Conventional and Synthetic Fuels," *Energy* 8, no. 12 (1983): 981–92. Stephen Schneider, in "The Changing Climate," *Scientific American* 261, no. 3 (September 1989): 70–79, gives a figure of approximately 5 billion metric tons per year. It should be noted that here and in the following calculations, the objective is to obtain order-of-magnitude estimates, not exact ones.
26. Fossil fuel quantities and consumption (in quadrillion BTUs) are from U.S. Department of Energy, Energy Information Administration, *International Energy Annual, 1988* (Washington, D.C.: Government Printing Office, 1989). Prices are from U.S. Department of Commerce, *Statistical Abstract of the United States, 1990* (Washington, D.C.: Government Printing Office). The coal price was computed as a weighted average of bituminous and anthracite prices.
27. For purposes of this illustrative calculation, fossil fuels are being treated as a single commodity measured in BTUs. In reality, implementation of carbon rights would have different effects on the prices of the different fossil fuels, because of differences in their CO_2 emissions per unit of energy released, and the differences in their elasticities of supply and demand. The purpose here is only to indicate the approximate magnitude of the wealth effects. With these caveats in mind, the 5 percent reduction in quantity would yield a wealth transfer equal to just under 5 percent of current expenditures if supply were perfectly elastic and the elasticity of demand were (minus) one. If both fossil fuel supply and demand were of unitary elasticity, the size of the wealth transfer would be doubled. Less elastic demand or supply would increase the value of the carbon rights.
28. World Bank, *World Development Report 1990* (Washington, D.C.: The World Bank), 127–8. This figure somewhat overstates the magnitude of the international development assistance effort, because many "aid" programs include commercial and strategic initiatives, and because a substantial amount of bilateral aid is "tied" to purchases in donor countries.
29. DeCanio and Lee.
30. For example, governments could use the proceeds from selling permits to reduce taxes by equivalent amounts.
31. Nathan Rosenberg and L. E. Birdzell, Jr., *How the West Grew Rich* (New York: Basic Books, 1986).
32. See Richard Benedick, "Ozone Diplomacy," *Issues in Science and Technology* 6, no. 1 (Fall 1989): 43–50, for a concise history.

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Emery M. Roe

GLOBAL WARMING AS ANALYTIC TIP

Global warming, like many other environmental controversies, mixes pervasive uncertainty with the certainties of expert (but contradictory) opinion. How can we know who is right about global warming, if the only things we have to work with are the scientists' competing scenarios, the truth-value of which has yet to be established? One approach is to rely on narrative policy analysis to identify the non-scientific, but policy-relevant role played by the global warming controversy. This approach shows that the controversy signals a wider "analytic tip" taking place in the examination of major public policy problems, a tip toward the notion that issues which can still be effectively dealt with locally, regionally or nationally must now first be addressed globally. The policy implications of analytic tip and the narrative features of the global warming scenario are profound for both environmentalists and their ideological opponents.

Many public policy issues have become so uncertain—their empirical, political, legal, and bureaucratic merits unknown, not agreed upon, or both—that the only things left to examine are the different stories people use to articulate and make sense of that uncertainty. How are we to

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evaluate stories about highly uncertain policy issues that increasingly dominate political discussion when their truth-value or tractability cannot be determined through conventional means?

One answer is narrative policy analysis. This approach seeks to generate a single story that embraces all the major conflicting scenarios in a policy controversy without slighting any of them, in order to recast the controversy in such a way as to make it easier to manage. Narrative policy analysis has been used to assess the 1980–82 Mediterranean fruit-fly controversy in California,[1] the debate over salinity and selenium toxicity in that state's San Joaquin Valley irrigation,[2] the animal rights controversy,[3] public concern over nuclear reactors built not according to design, and the Cuban missile crisis, among others.[4] This article employs narrative analysis to parse the policy implications of the controversy over global warming.

Global warming is a subject about which not only politicians and policymakers but scientific experts have staked out the widest range of contradictory certainties and uncertainties.[5] Yet governments around the world are urged to join together and take action, now. How are we to respond to such calls? It is said that atmospheric warming is too important to wait for the majority of scientists to agree on the matter. Gaps in scientific knowledge must not be used as an excuse for inaction, as global warming experts repeatedly remind us. But considering the costs of the various remedies proposed, *some* scientific rationale is needed. How much is enough? One answer comes from a narrative policy analysis that identifies the role played by this science controversy in analyzing global policy issues generally and environmental issues specifically. A principal feature of the global warming controversy, but one that has yet to receive the attention it deserves, becomes much clearer in this way: We are in a better position to respond to greenhouse climate change once we understand how "global" is articulated as an analytic category for evaluating issues said to have worldwide implications.

Certainties and Uncertainties in the Global Warming Scenario

Few scientists question the general propositions that greenhouse gases produced locally disperse and build up across the atmosphere and that this accumulation can lead to atmospheric warming. Nor do many question the empirical findings that CO_2 emissions into the atmosphere, particularly from vehicles and factories, have increased substantially over recent decades or that these increases have the demonstrated potential to produce climate change. Moreover, a growing number of experts are willing to

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take recent climatological data as indicating that average temperatures have indeed risen worldwide.

The consensus, however, is not unanimous, and that lack of unanimity is reflected in widespread uncertainty and controversy. Not all respected climatologists and meteorologists agree that atmospheric warming has taken place or will in the future. Existing global climate models are understood, even by their compilers, to be flawed in significant respects. While the majority of models, for example, assume that clouds will increase atmospheric warming, experts recognize that this effect, like that of oceans, is open to many unknowns. Modelers differ not only in their estimates of temperature increase (a matter of considerable practical importance to those adjacent to oceans), but also in their views of the models' usefulness in predicting future temperatures. Not only do meteorologists and climatologists disagree among themselves as to whether atmospheric warming is taking place, and if so, by how much, but the policy implications they have drawn have also been sharply criticized. Some economists, in particular, have reproached scientists for their dire proposals to remedy what they see as atmospheric warming.[6] In short, the atmospheric warming issue is full of uncertainties precisely because it is characterized both by scientific consensus (but not unanimity or proof on points that matter most for policy making) and by certainties cast up as expert (but in important instances contradictory) opinion.

The mix of certainty and uncertainty provides a natural starting point for a narrative analysis. For what surely must be one of the most salient, yet largely ignored, features of the global warming controversy has been how the *certainty of uncertainty* is used by those who argue that governments must take immediate action to avert the more serious effects of greenhouse climate change. Since no one can predict the precise location, let alone extent, of the potentially massive impact of atmospheric warming, everyone faces the chance of disaster, so it is argued, if appropriate efforts are not taken now to mitigate atmospheric warming. Because this argument's extended scenario is the focus of the article, it is summarized below for ease of reference:

> It is because of the unintended consequences of individual actions taken locally, regionally and nationally, particularly in developed countries, that people throughout the world now confront the prospect of global warming. This warming respects no artificial administrative boundaries like that of the nation state or lesser governmental entities. The chief reason governments must act quickly and decisively is that, while global warming and massive dislocations can be expected, the exact location of the local, regional and national disasters will remain a matter of great uncertainty. Thus, no one on the planet is immune to the disastrous potential of global warming. Govern-

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> ments cannot expect the matter to be resolved solely through actions taken at those very levels that got them into the dilemma in the first place. Accordingly, international action must be undertaken before global warming becomes a global tragedy of the commons.[7]

The temptation is to ask of each argument in the scenario, "Is it true? Can it be verified?" The prior question for the narrative analyst is, instead, "How have the structure and logic of the scenario—like other narratives, this one has a beginning, middle and end based on givens and presuppositions—affected what the scenario tells us, independently of what the scenario is describing?"[8] The short answer is that the narrative features of the global warming scenario put its proponents in a position to articulate what is admittedly a highly uncertain issue without at the same time making the scenario itself part and parcel of the uncertainty being represented.[9] The scenario's sense of "we-are-certain-about-uncertainty-in-atmospheric-warming" is, moreover, constructed not so much on the basis of the accuracy with which it describes reality as from a set of givens, descriptions, narratives, and presuppositions operating in the global warming controversy. The policy import of the scenario's narrative certainty becomes clearer in the next section, once we explore the dynamics underlying its construction.

Nothing in what follows invokes notions of a "rhetoric of science," "paradigm shifts," or the "social construction of reality" to debunk the global warming scenario or the seriousness of many of its supporters.[10] Nor will the scenario's detractors find here an argument questioning the empirical merits of global warming. There are good reasons why environmentalists in particular should abandon the scenario, but the reasons have everything to do with the scenario's structure and its implications for policy, not with what environmentalists think they are doing by appealing to the scenario. Indeed, its supporters are as much victims of the scenario's narrative structure and internal construction as we all are. Thus, when I speak of "narrative certainty" as independent of the representational accuracy of the description in question, I do not deny that descriptions refer to reality and can be judged in terms of how accurate they represent that reality. Rather, it is only when the reality being described is as uncertain as it is in the case of greenhouse climate change that we must look to how the structural features of narratives enable their tellers to be so certain about the policy relevance of that which is so uncertain, without implicating themselves in that uncertainty.

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The Narrative Features of the Crisis Scenario and Their Policy Implications

The scenario's certainty about the uncertainties of global warming is constructed in five interrelated steps:[11]

(1) The crisis scenario is based on a *given*, in this case the laws of physics. At this level of analysis, it does not matter whether the laws are paradigm-relative or universally valid. What is more important for our purposes is that the laws are taken for granted, that is, they are a matter of consensus about the nature of reality and thereby impart to a scenario based on them the sense of certainty that comes from a consensus already encoded in scientific discourse.[12]

(2) The narrative construction of the crisis scenario moves from the general given to specific *descriptions* of atmospheric warming and what are frequently taken to be its operational equivalents, global warming and greenhouse warming. At the descriptive level, atmospheric warming is treated as derivative from the laws of physics, while its cognates are assumed to be roughly synonymous, with "atmospheric" now defining a level of analysis that is broad enough to embrace a variety of atmospheric phenomena, ranging from local and regional-scale heat island effects over major metropolitan areas to fully realized global climate change across the planet.[13] Thus, in descriptive terms, atmospheric warming is neutral with respect to scale of occurrence: It simply describes what can happen when greenhouse gases disperse into the atmosphere whether locally, regionally, nationally or globally. In this way, the sense of certainty based on consensus over the given laws of physics is reinforced by the derivation of atmospheric warming from the laws of physics and tautological equation of the warming to other terms said to describe the same phenomenon (e.g., as when urban heat islands are described as instances of global warming at work).

(3) The narrative sense of certainty is further developed when uncertainty is introduced to transform atmospheric warming and its synonyms into two separate narratives, atmospheric warming *as a scientific problem* and global warming *as a crisis scenario*. In the former, reference to factual uncertainty is incorporated into the descriptions of atmospheric warming. Scientific consensus becomes consensuses within differing groups of experts.[14] In the case of global warming as a crisis scenario, atmospheric warming is itself now treated as a given, the implications of which are then extended into the argument about dire human and environmental consequences. The crisis scenario in particular uses scientific uncertainty about

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the indeterminate local effects of atmospheric warming to justify the immediate policy action needed to avert global warming.

At one level this incorporation of uncertainty into descriptions of atmospheric warming increases their representational accuracy. At another level the incorporation has narrative features separate from any enhanced accuracy of the descriptions. These narrative features have profound implications. In particular, introducing uncertainty into the description of atmospheric warming increases the sense of narrative certainty by recasting the description into a story (in fact, two stories) having the conventional narrative format of beginning, middle, and end. Atmospheric warming as a scientific problem is a journey starting from givens, encountering challenges along the way, and ending up with gaps in theory and fact having to be resolved or filled. The crisis scenario, by contrast, starts off with its own givens about greenhouse gas emissions, encounters its own challenges in the form of rising temperatures, and ends up with a calamity too frightening to tolerate. The two narratives are related, as shall be seen momentarily, but what deserves highlighting here is the paramount importance of the twofold narrativization. *Uncertainty as a topic is introduced into the atmospheric warming description precisely at the moment uncertainty is bounded within a pre-existing format stipulating its possible resolution.*

Moreover, uncertainty in the crisis scenario is articulated in such a way as to identify victims and apportion blame for global warming, thereby making the resolution of uncertainty not only stipulated, but morally compelled.[15] We may be uncertain just where droughts and floods induced by global warming will occur, according to the scenario, but who can be in favor of the resulting destruction, particularly when we know the guilty parties (mostly users of cars and factories in the North) and the victims (mostly in the South)? The scenario's very specific definition and assignment of victimization and guilt enables uncertainty over the local occurrence of global warming disasters to be seen not just as a cognitive, but also as an ethical basis of action. The scenario's fusion of the moral and cognitive is instrumentally pivotal, since it enables scientists to be both "moralizing" and "objective" at the same time, two attributes conventionally treated as difficult to combine in science.[16]

(4) Becoming the subject of *controversy* not only within but also outside the scientific community reinforces further the crisis scenario's sense of certain uncertainty. The popular consensus is that scientific uncertainty is just as much a given as are the laws of physics. In much of the public's view, the more controversial the scientific issue, the greater the certainty that something real and fundamentally important is at stake. This consensus over scientific uncertainty finds itself encoded in ordinary discourse just as the laws of physics are in scientific discourse. Indeed, the environ-

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mental community's adversarial use of the written word—be it in the form of legal briefs, press releases, or think-tank reports—to focus on the risks of what were once thought to be proven science and technology (pesticide use comes immediately to mind) has, more than anything else, led the public to become increasingly certain that science is uncertain.[17]

Controversializing global warming has also meant that there is not just one crisis scenario, but many versions being compared and contrasted, particularly in the form of different global circulation models for greenhouse gases discharged into the atmosphere. Debate over the models has tended to focus on their representational merits and the realism of their assumptions. What has been less noted is the certainty created by the meta-language and forms of discourse for detecting differences between models. Comparison itself leads to narrative certainty, as the pre-existing rules and procedures of scientific discourse governing the detection of difference in models presuppose that we can be certain such differences are ascertainable and comparable.[18]

The attempts of scientists to reduce some of the controversial elements in the global warming debate have also produced certainty in the narrative sense. Advocates of the crisis scenario, for example, have argued that their various climate models and scenarios are really nothing more than variants of the same, more basic description of atmospheric warming as a scientific problem. Here the attempt is to treat what are admitted by all to be imperfectly rendered crisis scenarios as versions of a story that can always be told more simply, if not now by the scientists themselves, then in the end by scientific theories and the laws of physics.[19] In seeking to reduce the controversy to matters under the purview of the scientific community alone, a circular sense of certitude is established, whereby scientists, whether they intend it or not, have the final say on the subject, be it in the form of a description, a scientific problem, a crisis scenario, or a controversy. Indeed, it borders on tautology to say that scientists are pivotal in determining when any science controversy has ended.[20]

(5) The global warming controversy operates within a *wider narrative framework* than that posed by science controversies alone. The larger context can be best glimpsed by examining the way in which "global" in the crisis scenario has more or less ceased to be synonymous with "atmospheric" at the descriptive level. Descriptively, global and atmospheric are, as was pointed out earlier, interchangeable terms. They are neutral equivalents that merely seek to specify a level of analysis to measure greenhouse gases that can be tracked not just globally, but locally, regionally, and nationally as well. But in the crisis scenario, "global" is used less to complement than to *reject* the appropriateness of analyzing atmospheric warming at the local, regional, and national levels. Global warming represents,

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according to the scenario, a worldwide tragedy of the commons in the making, one requiring concerted international action precisely because governments cannot expect the warming to be effectively reduced solely through actions taken at those very same local, regional, and national levels that got them into this difficulty in the first place. Whatever the merits of this line of reasoning, "global" is clearly being deployed here not as just one of the several levels of analysis for monitoring the atmospheric accumulation of greenhouse gases.

It is important to be clear about how and at what level "global" and "atmospheric" cease to be equivalent. In ordinary discourse, "global warming" and "atmospheric warming" are by and large synonymous—and with good reason. When it comes to describing the physical processes of greenhouse gas dispersion and accumulation in aggregate terms, it matters little whether by "aggregate" we mean global or atmospheric. The problem arises when we move from description to scenario, since "global," unlike "atmospheric," takes on affective connotations in the scenario that it never had at the descriptive level.

Each locality, region, and nation has its own effects on the atmosphere, as does the planet as a whole. But where "atmospheric warming" is descriptively indifferent with respect to the scale of the area of greenhouse gas dispersion, the crisis scenario privileges the global level of analysis over the local, regional, and national ones. Nothing in atmospheric warming as a physical process requires climate change to be measured first and foremost at one level rather than another. Temperature change can just as well be evaluated in terms of regional warming, or warming over the oceans, or urban heat island effects, as not. Moreover, nothing in the physical processes of greenhouse climate change entails, either logically or empirically, the global tragedy of the commons posited by the crisis scenario. Temperature change induced by greenhouse gases has been going on for millennia without human intervention, yet most of us would be loath to call that process a tragedy of the commons in the making.

What is it, then, that accounts for the affective connotations "global," but not "atmospheric," takes on in the crisis scenario, when both terms are basically equivalent at the descriptive level? One does not need to search far to see that the global warming scenario, like the controversy itself, operates within a wider discourse about global change, global impact, global economy, global politics, global commitments, global conflict, global resources, global affairs, the global environment, global food supplies, global media, the global marketplace, and the global village, to name but a few.[21] Once global warming is situated within the discourse of globalisms, it becomes clear that the crisis scenario is grist not only for a specific science controversy, but also for a broader analytic increasingly

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taken to govern public discourse about presumably supranational policy problems. Indeed, the rush of globalisms signals what appears to be an *analytic tip* in the examination of major public policy problems, where what used to be understood as local, regional, or national issues have now to be analyzed (or so it is increasingly argued) as global ones.

The policy implications that follow specifically from the role played by the crisis scenario within the wider analytic tip are discussed in the next section. What needs to be noted here is only how the recognition of a broader analytic context reinforces the narrative certainty built up in the previous four steps, once again irrespective of the scenario's claims to representational accuracy. Narrative certainty increases because the presence of any context for analyzing global warming ensures that, while the meaning of global warming varies according to the context, global warming will thereby always have meaning; yet narrative uncertainty increases because that meaning is always indeterminate, i.e., the existence of even one wider analytic entails the possibility of other contexts not yet realized.

* * *

This five-step narrative construction of the global warming scenario underscores why it is that the crisis scenario not only describes a physical process marked by empirical (though at times highly uncertain or contradictory) indicators, but also has the form of a definition articulated through a series of givens, presuppositions and narratives. Indeed, what is striking about the global warming controversy is the status of the crisis scenario as an extended definition that gets more elaborate as narratives are constructed from descriptions that are constructed from givens. What looks solely like the explanation of a process taking place through time turns out on closer inspection to look also like a computer program defined by a series of steps and derivations.[22] The summary of the crisis scenario presented above can, from one perspective, be viewed as a proposed explanation of what is actually going on in reality, while from another perspective it is equivalent to a dictionary definition of "scenario, *as in global warming*. . . ."

This narrative understanding of the crisis scenario, in turn, shows how vulnerable that scenario is to being undermined in ways that have nothing to do with its empirical merits. The following actions, for example, would have the effect, whether intended or not, of eroding the scenario's credibility, regardless of its claims to representational accuracy: Displace the givens in the controversy by appealing to the "arbitrary" nature of normal science and the fickle passing of popular consensus; insist at every juncture on the lack of synonymity between atmospheric warming and global

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warming; denarrativize the crisis scenario by insisting that "getting the numbers right must come before knowing what is the real story about global warming," for example, by stressing the need for better-calibrated measurements of temperature change as a precondition for action; deny the role of scientists in bringing the global warming controversy to closure, e.g., by arguing that this controversy, unlike others, is really an issue of analytic tip (more below); and, last but not least, assert that the alternative contexts in which to analyze global warming are many and unknowable, thereby necessitating much more caution from both the scenario's supporters and detractors.

Moves like these are already being made. Who can doubt that there is another crisis scenario in the wings, even worse than that of global warming, waiting for scientific and public attention? The changing fortunes of the crisis scenarios concerning population growth, energy shortages, and nuclear winter, to name but three recent ones, have less to do with scientific merit (or political expediency) than with the fact that new crisis scenarios are themselves a judgment on the narrative priority of those they are about to displace, however temporarily. Too many scientific givens, consensuses, terms, descriptions, and controversies exist for any one set of permutations and combinations, cast up in the form of a single crisis narrative, to claim long-term scientific, let alone political hegemony over others.

Why Environmentalists Should Abandon the Crisis Scenario: The Implications of Global Warming as Analytic Tip

Fortunately, the role that the global warming scenario is currently playing in the analytic tip toward "globalism" provides specific guidance on how to respond to the issue of greenhouse climate change.

Analytic tip, as used here, is analogous to linguistic tip, where a language that has been demographically stable for generations seems to "tip" suddenly under shifting demographic pressure in favor of some other language.[23] By extension and in the same terms used to describe its linguistic counterpart, analytic tip can be conceived metaphorically as the gradual accretion of negative feelings toward conventional categories of analysis until a critical moment or period arrives when analysts seem to abruptly abandon their conventional terms and switch over to newer analytic categories.[24] An earlier example of analytic tip was the change in policy discourse from the focus on means and ends especially popular in public administration during the 1940s and 1950s to the focus on benefits and costs that prevails in contemporary policy analysis. The tip occurred when a number of public administration programs and departments, then

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under mounting criticism, gave way to the establishment of graduate schools of policy analysis during the late 1960s and early 1970s. The current wave of globalisms, in turn, can be understood as preparing the way for another analytic tip in policy discourse, and the global warming crisis scenario can be seen as one, if not *the*, precipitating factor doing the actual tipping. But today's shift from the local, regional, and national to the global as the analytic point of departure is occurring less through organizational change than through scientists taking on the role of policy analysts.[25]

Happily, the current analytic tip is easier to discern than is global warming itself. The negative light in which local, regional, and national levels of analysis are cast is a prime indicator. An even better one is the appeal by the scenario's supporters to a global analytic they in no way need in order to make their case. A number of experts agree, for example, that governments have nothing to lose in assuming atmospheric warming is taking place, since the actions needed to combat it—namely, reducing population growth and greenhouse emissions—are justified on other grounds. "Many of the measures we should begin to take to mitigate possible effects of climatic warming should be taken anyway for other reasons," advises an informed observer in *Issues in Science and Technology*; "even were there to be a negligible greenhouse effect, we should be taking actions," adds a *Science* editorial; and "conveniently, most of what would need to be done to fight a greenhouse catastrophe needs doing anyway, for other reasons," confirms *The Economist*.[26] If this is so, then there seems little prima facie reason to buy into a global analytic when its only major contribution to date—the repeated appeal to treat atmospheric warming as an urgent policy issue—is salient solely when marshaled in support of what governments should be doing locally, regionally, and nationally anyway. And we have every reason to beware of subscribing to all manner of forward and backward linkages, the policy import of which may be more uncertain than atmospheric warming itself, e.g., that "Global Warming Means New Global Politics," as a headline in the *New York Times* tries to persuade us.[27]

In fact, the global analytic works *against* the improved control of greenhouse gas emissions. By and large only those who advocate the crisis scenario treat atmospheric warming as a global tragedy of the commons in the making. Remove the prop of atmospheric warming as necessarily a global commons problem, which no government can solve on its own, and those officials who have yet to do much by way of reducing population growth and greenhouse gases will have one less major reason to justify their continuing inaction. We already have sufficient scientific, technological, and public health grounds to undertake and ensure the appreciable reduction of CO_2 emissions in major U.S. metropolitan areas

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through more effective pollution abatement and control measures there. These initiatives are in no way helped by claiming that pollution control, for example in Los Angeles, cannot really work as long as the predatory polluting of a Mexico City or China continues unabated. Convincing policymakers that atmospheric warming as a local, regional, or national problem should not be confused with global warming as a tragedy of the commons may well be, I believe, *the* necessary condition for getting them to do more than they have done.

Moreover, it is precisely at the local, regional, and national levels that the substantial learning curves remain in pollution abatement and regulation, not at the global level. It is also at these levels that scientists can be held accountable for the remedies they recommend: It is exceedingly more difficult to falsify a theory that predicts massive flooding will take place, but not where or when, than to rebut a theory that maintains these kinds of emission control devices will work in those kinds of cars and this kind of area, but not in others.[28] More generally, experience to date suggests that what works best in terms of reducing pollution are *programs* at the local level and *policies* at the national level, with *regulations* working less well in between, and *international efforts* least effectively of all. No one, for example, knows if the Montreal Protocol to protect the ozone layer will have any independent effect on reducing chlorofluorocarbon (CFC) production, let alone provide a useful guide for controlling atmospheric warming.[29]

What is known, however, is that what works works in one factory, city, or region does not work everywhere. A thousand flowers are blooming, with market-like emission control measures as much a part of the learning curves as more government regulation and better technology. It is difficult to see how a global analytic that casts the local, regional, and national in such a negative light as does the crisis scenario could foster anything like these "decentralized" solutions to CO_2 emissions control.

What happens, though, if local, regional, and national solutions fail, and the global warming scenario turns out to be true? The question, of course, raises the logically and empirically prior one, What reason do we have to believe that if we try and fail locally, regionally, and nationally, we will have any more success globally? The issue here is not what should be done or even must be done globally, but what financial and decision-making resources allow us to do practically. Do we really believe, after four decades of trying to transfer technology and institutional arrangements from the developed to the developing worlds, that we will have fewer failures when transferring even more complex technologies and arrangements across altogether wider tracts of the planet? We already have considerable grounds for decentralized action to reduce CO_2 emissions across

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the United States, without waiting to settle the global technology transfer problem. In a world where the best is the enemy of the good, it truly is better to *act* locally, even if one should feel compelled to *think* globally.

Such considerations lead, in turn, to a seeming paradox: The more you believe that atmospheric warming is really taking place, the more reason you have for not subscribing to the global warming scenario. Environmentalists, especially, have every reason to abandon the scenario, as its global analytic works to the detriment of what can and needs to be done locally, regionally, and nationally to counter the demonstrated and deleterious effects of excessive CO_2 emissions. Equally important, that very structure of the scenario which enables its supporters to talk in a noncontradictory way about being certain about global warming uncertainties ends up, as we saw, rendering the scenario highly vulnerable to internal undermining and external displacement by other crisis scenarios—a deplorable feature for those who believe atmospheric warming is truly taking place. Fortunately, once global warming as a scenario is conceptually separated from atmospheric warming as a problem, tradeoffs in government budget expenditures become all the more apparent. The descriptive neutrality of atmospheric warming with respect to level of analysis invites comparing the benefit gained from dollars spent to reduce greenhouse gas emissions at the local, regional, and national levels—something that cannot be said of the global warming scenario. It is only "beneath" the global level that the opportunity costs of research and deferred action are most urgently visible and indeed most calculable.

The Use of Scientific Uncertainty by Anti-Environmentalists

Those who believe that global warming is not taking place should find little comfort in the above argument. Consider only the case of those "market environmentalists" or libertarians who advocate across-the-board market solutions to problems associated with greenhouse gas emissions. It could be expected that they would be more favorably disposed to local, regional, or national solutions, at least to the extent the solutions were market-oriented, and less favorably disposed to those international or global remedies predicated on more government planning and regulation. Despite that expectation, supporters of market solutions are unlikely to object to the crisis scenario on the grounds of its global analytic for the very same reason they have seized on scientific disagreements in order to discredit that scenario. Atmospheric pollution at all levels of analysis, not just the global, poses a direct threat to shrinking or eliminating government in favor of the market. Even "market" solutions like emissions trading schemes must be imposed by the state. Far better for the detractors,

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then, to undermine the scenario by appealing to scientific uncertainty and contradictory expert opinion than to let opposition to the scenario become the rationale for local regulation that, even in market-like forms, involves heightened government intervention and control. Yes, a thousand flowers are blooming, but not all of them will be for sale in the market.

Ideologues of at least two varieties have, then, a perverse stake in treating atmospheric warming as a "global" problem. In the case of libertarians, their ideology is preserved by turning a blind eye to the analytic tip toward globalism, even though this globalism works against site-specific market solutions. Environmentalists with a leftist bent face the same dilemma, but from the other side: They forfeit any real hope for decentralized action against atmospheric warming, wherever it occurs, by making globalism an essential feature of their ideology. If environmentalism involves a genuine concern for remedying pollution problems, environmentalists should be expected to *dissent* from the drive toward globalistic consensus. But if, as their respective detractors contend, environmentalism and libertarianism are really attacks on modern political and economic life—involving the rejection of either capitalism or government—then the moral satisfaction that comes from their treating atmospheric warming as a global problem can be expected to win out.

NOTES

1. Emery Roe, "Narrative Analysis for the Policy Analyst: A Case Study of the 1980–1982 Medfly Controversy in California," *Journal of Policy Analysis and Management* 8, no. 2 (1989): 251–73.
2. Janne Hukkinen, Emery Roe, and Gene Rochlin, "A Salt on the Land: A Narrative Analysis of the Controversy over Irrigation-Related Salinity and Toxicity in California's San Joaquin Valley," *Policy Sciences* 23, no. 4 (1990): 307–29.
3. Emery Roe, "Nonsense, Fate and Policy Analysis: The Case of Animal Rights and Experimentation," *Agriculture and Human Values* 6, no. 4 (1989): 21–9.
4. Emery Roe, "Applied Narrative Analysis: The Tangency of Literary Criticism, Social Science and Policy Analysis," *New Literary History* 23, no. 3 (1992): 555–81. See also Emery Roe, "Intertextual Evaluation, Conflicting Evaluative Criteria and the Controversy over Native American Burial Remains," *Evaluation and Program Planning* 15, no. 4: 369–81.
5. A good introduction to the pervasiveness and importance of uncertainty in the global warming controversy can be found in Eugene Skolnikoff, "The Policy Gridlock on Global Warming," *Foreign Policy* no. 79 (1990): 77–93.
6. See Peter Passell, "Economic Watch: Curbing the Greenhouse Effect

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Could Run into Trillions," and letters to the editor, *New York Times*, November 19 and November 30, 1989: 1, A30. One of the major scientists publishing on global circulation models, R. D. Cess, is reported to have concluded that "as presently formulated" the computer models cannot be used to predict global warming, and that "whether they can ever be used for that purpose is problematical" (quoted in William K. Stevens, "Skeptics Are Challenging Dire 'Greenhouse' Views," *New York Times*, December 13, 1989: A18).

7. Parts of this argument can be found Roberta Balstad Miller, "Global Change: Challenge to Social Science" (Washington, D.C.: Division of Social and Economic Science, National Science Foundation, 1988); and John Harte, "Global Warming: Causes, Consequences, Cures," a presentation to the Commonwealth Club of California (1989). Brian Barry characterizes the scenario's tragedy of the commons feature this way: "The problem of bringing about a massive reduction in worldwide emissions of carbon dioxide (and other 'greenhouse' gases) is quite clearly a collective action problem. This entails that every country has an incentive to encourage others to act while hanging back itself" ("Modern Knowledge and Modern Politics," *Government and Opposition* 24, no. 4 [1989]: 388–9). Skolnikoff summarizes the policy implications that follow from the dilemma: "No country can solve the problem [global warming] on its own, and the actions of one can be negated if others fail to act. That does not mean unilateral action is irrelevant, only that it is not a solution. . . .Universal action clearly seems required" (84).
8. The notion that a story is defined by its having a beginning, middle, and end is an old one. For example, Gerald Prince's definition of "narrative" reads in part: "The story always involves temporal sequence (it consists of at least one modification of a state of affairs obtaining at time t_o into another state of affairs obtaining at time t_n), and this is its most distinctive feature. Of course temporal relations between the situations and events making up a story are not the only ones possible: these situations and events may be related causally, for example. Moreover, in a 'true' narrative as opposed to the mere recounting of a random series of changes of state, these situations and events also make up a whole . . . a structure having—to use Aristotle's terminology—a beginning, a middle and an end." Gerald Prince, *A Dictionary of Narratology* (Lincoln: University of Nebraska Press, 1987), 58–9.
9. This, for example, is related to how one can analyze nonsense without being nonsensical in the process. See Richard Hilbert, "Approaching Reason's Edge: 'Nonsense' as the Final Solution to the Problem of Meaning," *Sociological Inquiry* 47, no. 1 (1977): 25–31.
10. To be specific, the following analysis draws from narratology and semiotics, not from the rhetoric, philosophy, or sociology of science. For an article that explicitly treats global warming and climate change as part of

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the rhetorical framework of the environmental movement, see Frederick H. Buttel, Ann P. Hawkins, and Alison G. Power, "From Limits to Growth to Global Change: Constraints and Contradictions in the Evolution of Environmental Science and Ideology," *Global Environmental Change* 1, no. 1 (1990): 57–66.

11. The following five sub-sections are based upon and draw heavily from Michael Riffaterre, *Fictional Truth* (Baltimore: Johns Hopkins University Press, 1990). Much of what the book has to say about how the appearance of truth is constructed in fictional narratives has direct applicability to how the sense of certainty is constructed in narratives about uncertainty.
12. See ibid., xiv.
13. Ibid.
14. See Richard Norgaard, "Environmental Science as a Social Process," paper prepared for a workshop on environmental information held at the University of Ottawa (1990), 2.
15. This paragraph paraphrases and draws heavily from the narrative analysis of James Ettema and Theodore Glasser, "Narrative Form and Moral Force: The Realization of Innocence and Guilt through Investigative Journalism," in Bernard Brock, Robert Scott and James Chesebro, eds., *Methods of Rhetorical Criticism: A Twentieth-Century Perspective*, 3rd ed. (Detroit: Wayne State University Press, 1989), 269.
16. Ibid., 269–71.
17. For an example of how environmental critiques increased the popular sense of uncertainty in one major science controversy, see Roe, "Narrative Analysis for the Policy Analyst."
18. Riffaterre, xvi.
19. Ibid., xv.
20. See H. Tristram Englehardt, Jr., and Arthur Caplan, eds., *Scientific Controversies: Case Studies in the Resolution and Closure of Disputes in Science and Technology* (Cambridge: Cambridge University Press, 1987); and Peter Galison, *How Experiments End* (Chicago: University of Chicago Press, 1987).
21. The wider narrative framework in which terms like "global" take their meaning—be that framework in the form of what Riffaterre calls an intertext or a more general intertextuality—is equivalent to the single story in a narrative policy analysis that recasts the controversy of interest in such a way as to make it more amenable to the conventional policy analysis (see Riffaterre, xviii). For a more detailed discussion of the difference between intertext and intertextuality, see Michael Riffaterre, "Compulsory Reader Response: The Intertextual Drive," in Michael Worton and Judith Still, eds., *Intertextuality: Theories and Practices* (New York: Manchester University Press, 1990), 56–78.
22. For a serious but entertaining discussion of the general issues raised by this point, see A.J. Greimas, "Basil Soup or the Construction of an Object of

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Value," in Paul Perron and Frank Collins, eds., *Paris School Semiotics: II. Practice* (Philadelphia: John Benjamins Publishing Company, 1989), 1–12.

23. Nancy Dorian, *Language Death: The Life Cycle of a Scottish Gaelic Dialect* (Philadelphia: University of Pennsylvania Press, 1981), 51.
24. The phrasing comes from Nancy Dorian, "Abrupt Transmission Failure in Obsolescing Languages: How Sudden the 'Tip' to the Dominant Language in Communities and Families?" in V. Nikiforidu, M. Van Clay, M. Niepokuj, and D. Feder, eds., *Proceedings of the Twelfth Annual Meeting of the Berkeley Linguistics Society* (Berkeley: Berkeley Linguistics Society, 1986), 74–5. As Dorian notes (ibid., 75), the change only appears to be sudden: "Yet when the tip has occurred and one begins to examine the period which led up to it, the tip is seldom if ever so sudden as it appeared."
25. Analytic tip represents the displacement of one set of terms and constructs by a different set within a pre-existing public discourse. Since the terms involved are only some among many, there is no presumption that public discourse is itself undergoing a paradigm shift in the process. It should go without saying that the analysis of means and ends has never really disappeared and there are those who now recommend means/ends analysis over benefit/cost analysis. See, e.g., Giovanni Sartori, "Undercomprehension," *Government and Opposition* 24, no. 4 (1989): 398.
26. Robert Cowen, "Forceful Yet Balanced Communication," *Issues in Science and Technology* 6, no. 2 (1989/90): 88; Philip Abelson, "Uncertainties About Global Warming," *Science* 247, no. 4950 (March 30, 1990): 1529; and "Rethinking the greenhouse," *The Economist* , December 16–22, 1989: 14.
27. Allan Gold, "Global Warming Means New Global Politics," *New York Times*, November 12, 1989: E5.
28. As a senior scientist with the Natural Resources Defense Council put it, atmospheric warming is likely "to be punctuated by more powerful hurricanes, more frequent severe droughts, pest outbreaks, forest diebacks, millions of environmental refugees fleeing their flooded homelands and other impacts we cannot now imagine." Daniel Lashof, "A Net Saving," letter to the editor, *New York Times*, December 8, 1989: A38.
29. A representative menu of global climate control proposals—ranging from international treaties, plans, and agencies to international protocols, agreements and control regimes—can be found in World Resources Institute, *Greenhouse Warming: Negotiating a Global Regime* (Washington, D.C., 1991).

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*Jeffrey Friedman**

POLITICS OR SCHOLARSHIP?

Environmental issues imperil the libertarian utopia of a society in which the individual is completely sovereign over his or her private domain. Taken seriously, this aspiration would lead to an environmentalism so extreme that it would preclude human life, since most human activity entails incursions against the sovereign realms of other human beings. The fallback position many libertarians have adopted—free-market environmentalism—retreats from libertarian ideals by permitting some of the physical aggression of pollution to continue. Free-market environmentalism does embody the postlibertarian insight that collective decisions in mass democracies tend to be inferior to individual decisions in market economies. But so far, free-market environmentalism has stopped short of carrying this insight to its logical conclusion by proposing the complete depoliticization of environmental decision making. A thought experiment in environmental depoliticization reveals the practical limits of free-market environmentalism. The upshot is that neither libertarianism nor free-market environmentalism can culminate in anything close to the abolition of the modern state; they can, however, by problematizing certain aspects of that state, allow us a clearer understanding of political and cultural life.

Mark Sagoff and Roger Taylor show elsewhere in these pages that the central libertarian principle of inviolate self- and property-ownership cul-

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minates in an environmentalism so radical that it exceeds the most antihuman tendencies that have been attributed to the deepest ecologists.[1] Martin Anderson, a Reagan White House official, once summarized this radical libertarian environmentalism: "Just as one does not have the right to drop a bag of garbage on his neighbor's lawn, so does one not have the right to place any garbage in the air or the water or the earth, if it in any way violates the property rights of others."[2] The doctrine enunciated by Anderson would require prohibiting all involuntary interpersonal physical contact; the final effect of this prohibition would be to limit the planet to one human occupant.

After criticizing the equivocations that have often obscured the radically environmentalist consequences of libertarianism, I will consider whether there can be a form of free-market environmentalism that allows a retreat from environmentalist extremism while giving due weight to valid libertarian reservations about political decision making. Thinking about how far free-market environmentalism could be pushed, while not a useful exercise in practical politics, may help to illuminate the value to postlibertarian scholars of the libertarian impulse to depoliticize the environment.

Libertarianism as Environmental Extremism

The extreme environmentalist implications of libertarianism have occasioned little comment. Among environmentalists, Sagoff and Taylor may be alone in recognizing how easily the libertarian doctrine of self-ownership can be harnessed to a radical critique of pollution as a form of rights violation. Among libertarian sympathizers, only David Friedman has persistently pointed out the extreme antipollution ramifications of the libertarian principle of inviolable self-ownership—although as Taylor notes, Robert Nozick's detour to a form of free-market environmentalism may have been motivated by an awareness of where unadulterated libertarianism would lead. (Martin Anderson is probably unaware of the ramifications of his stern prescription.)

Murray Rothbard, who is the true author of the libertarian doctrine Nozick made famous (despite its Lockean and Kantian trappings), proclaims that "everyone has the right to have the physical integrity of his property inviolate."[3] David Friedman demolishes this position: the problem, as he puts it, is that "an absolute right to control one's property proves too much." For example,

> carbon dioxide is a pollutant. It is also an end product of human metabolism. If I have no right to impose a single molecule of pollution on anyone else's

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> property, than I must get the permission of all my neighbors to breathe. Unless I promise not to exhale.[4]

He might have added that given the dispersion of one's exhaled carbon dioxide throughout the atmosphere, libertarian principles would require that permission to breathe be granted not only by one's neighbors, but by much or even all of the earth's human population. Nor does it take much effort to see that strict libertarians must object to much more than the exhalation of carbon dioxide. No atmospheric pollutant, from industrial emissions to campfire smoke, can be kept from invading the lungs of unwilling human beings. Even the sight of another human being or of the changes he or she wreaks on the natural environmental (e.g., by building an ugly house, or any house at all, that is visible to his or her neighbors) is a physical infringement of individual rights. For according to libertarian doctrine, as Friedman puts it,

> I have the absolute right to do what I want on my land, provided that I refrain from interfering with your similar right on your land.
>
> But what counts as interfering? If I fire a thousand megawatt laser beam at your front door I am surely violating your property rights, just as much as if I used a machine gun. But what if I reduce the intensity of the beam—say to the brightness of a flashlight? If you have an absolute right to control your land, then the intensity of the laser beam should not matter. Nobody has a right to use your property without your permission, so it is up to you to decide whether you will or will not put up with any particular invasion.
>
> So far many will find the argument convincing. The next step is to observe that whenever I turn on a light in my house, or even strike a match, the result is to violate the property rights of my neighbors. Anyone who can see the light from his own property, whether with the naked eye or a powerful telescope, demonstrates by doing so that at least some of the photons I produced have trespassed onto his property. If everyone has an absolute right to the protection of his own property then anyone within line of sight of my can enjoin me from doing anything at all which produces light[5]

—or, one might add, anything at all which alters the pattern of light that would otherwise reach one's neighbors.

Of course this is outlandish, but only because it is a *reductio ad absurdum* of libertarian principles. At bottom libertarianism seeks to make every human being the ruler of his or her own domain, as delimited by his or her property rights. Those rights instantiate the principle that nobody should be subjected to any physical aggression. In Rothbard's words, "everyone should be able to do what he likes, except if he commits an overt act of

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aggression against the person and property of another."[6] Property rights serve this principle by insulating people from each other, so that they may do as they wish on their own land, free from interference. Since the atmosphere cannot be divided into parcels of private property as land can, strict libertarianism would require that each person possess his or her own atmosphere, unpolluted by the activities of anyone else. The libertarian ideal is, in short, so sensitive to environmental externalities that it is incompatible with human coexistence. Short of the ultimate in atomistic individualism—a planet for every person—any pollution, and hence any human activity, is, in the libertarian view, a crime.

Libertarian Epicycles

In a classic paper on libertarian environmental jurisprudence, Rothbard labors heroically to escape this uncomfortable conclusion. First, he distinguishes between private-property "boundary crossings" that "are invisible, undetected by man's senses, and harmless," on the one hand, and those that are tangible and harmful, on the other. The first group of boundary crossings, he maintains, are "not really invasions of property, for we must refine our concept of invasion to mean not just boundary crossings, but boundary crossings that in some way interfere with the owner's use or enjoyment of his property. What counts is whether the senses of the property owner are interfered with."[7]

The idea that human beings are entitled to be free of phenomena they can detect directly, through their natural sense organs, but not indirectly, through the use of their minds and scientific measuring devices, has no discernible basis either in the notion that "every man is a self-owner, having absolute jurisdiction over his own body" and, by extension, over the property he "homesteads," or in its corollary, that "one does have a right to not have his air invaded by pollutants generated by an aggressor."[8] But even if one grants that Rothbard's sensory primitivism disposes of the threat that exhaled carbon dioxide poses to the property rights of others (leaving aside possible greenhouse effects), it does not address such phenomena as photon pollution, which *are* evident to the senses and which most surely may interfere with one's "enjoyment" of his or her property.[9]

This is where Rothbard's above-quoted stipulation that pollution must be "harmful" comes in, but it does not sit well with his opposition, earlier in the same article, to the "mischief" committed by those legal and political theories that, by substituting "the vague concept of 'harm' . . . for the precise one of physical violence," fail to "pinpoint physical invasion as the only human action that should be illegal."[10] Within a few lines of thus expressing his opposition to using harm as a criterion of coercion,

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Rothbard must reverse himself, embracing this "vague concept" in order to stave off the prospect of prohibiting virtually all human activity.

Rothbard manages this by recourse to a legalism that has it both ways. Following common-law usage, he redefines harm as "physical invasion of person or property."[11] At first glance this seems to be a dead end: his definition simply christens as "harm" his doctrine of forbidding only physical invasion; but it is the doctrine, not what it is called, that causes the problem of banning all boundary crossings (or at least all that are perceivable by the natural senses), thereby making human life impossible. It soon transpires, however, that merely by attaching the previously "vague" word *harm* to what Rothbard originally portrayed as its "precise" antidote (the doctrine of physical invasion),[12] Rothbard has smuggled into his boundary-crossings theory the "mischievous" *content* of the doctrine of harm: "Physical invasion or molestation needs to be actually 'harmful' or to inflict severe damage in order to constitute a tort."[13] This, of course, is exactly the principle Rothbard began by opposing. When he tries to reconcile this self-contradiction, he leaves his doctrine stranded by half retracting it:

> The courts properly have held that such acts as spitting in someone's face or ripping off someone's hat are batteries. Chief Justice Holt's words in 1704 still seem to apply: "The least touching of another in anger is battery." While the actual damage may not be substantial, in a profound sense we may conclude that the victim's person was molested, was interfered with, by the physical aggression against him, and that these seemingly minor actions have become legal wrongs.[14]

So: the unsound doctrine of harm must be replaced by that of physical boundary crossings. But if we call the latter "harm," then we can insist that it require "severe damage"—ruling out the prosecution of photon polluters, for instance. Then again, prosecutable damage can merely amount to dislodging somebody's hat, which apparently is not severe but is "profound." So we find ourselves back at a harm-free boundary-crossings doctrine that would *not* prevent the courts from taking action against photon pollution.

Rothbard might have fared better had he openly embraced the harm principle in order to rule out prohibitions of photon-like boundary crossings, but attacking the "vague concept of 'harm'" has an important purpose. Rothbard recognizes that those liberals—including Mill and Hayek—who define coercion in terms of harm thereby "permi[t] and justif[y] a wide range of government interference with property rights" in order to avert the harm that may follow from strictly enforcing such rights.[15] Although private-property libertarianism and social-democratic

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liberalism have in common a commitment to individual freedom, the latter, which seeks to preserve freedom by protecting the individual from harm, avoids the atomistic conundrum that results from equating freedom with the inviolability of physical boundaries.

Rothbard's understandable desire to steer between the rock of social democracy and the hard place of environmental extremism may account for his self-contradictions. But this is a dilemma that afflicts libertarianism in general, not just Rothbard's version of it. The question is, should libertarians define coercion without reference to harm? This would preclude the statism that might follow from a broader definition, yet would condemn human activities that lead to boundary crossings by photons and other tangible yet harmless emissions. Or should they allow such forms of pollution since they are not harmful, thereby opening the door to social democracy so as to rectify what *is* harmful?

The latter option suffers the additional disadvantage of sanctioning a wide array of state action against harmful *pollution*. Thus, even if Rothbard were somehow to square his opposition to the concept of harm with his use of it to stave off environmental *extremism*, he would then have to find a way around environmental *statism*. When he allows himself to wonder what would happen if such physical but intangible boundary crossings as radio waves were found to be "harmful, [i.e.] that they cause cancer or some other illness," he admits that "then they would be interfering with the use of one's person and should be illegal and enjoined. . . ." Lest he rescue libertarianism from David Friedman only to deliver it to Al Gore, he immediately snatches back this concession with a new legalism: ". . . *provided of course that proof of harm and causal connection between specific invaders and specific victims are established beyond a reasonable doubt*."[16]

Why this delicacy about the standards of evidence? Operationally, as we shall see, because it would rule out legal action against most forms of pollution, which are notoriously difficult to trace to their source and which harm people and ecosystems cumulatively and thus interactively rather than all at once and independently (like knives, guns, and other traditional instruments of battery). Ostensibly, because "where it is unclear whether a person is committing aggression . . . the only procedure consonant with libertarian principle is to do nothing; to lean over backwards to ensure that the judicial agency is not coercing an innocent man. If we are unsure, it is far better to let an aggressive act slip through than to impose coercion and therefore to commit aggression ourselves."[17]

This rationale for strict standards of causal evidence may not at first seem too objectionable: it expresses a deontological perspective often assumed to be inherent in libertarianism. But there is no justification for this assumption.[18] Granting for the moment that individual freedom is the

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supreme value, should one not try to maximize it and minimize its opposite (as defined by libertarians), physical aggression? Why not, then, embrace a teleological version of libertarianism, which obliges one to suppress as much aggressive violence as possible, rather than the deontological version, which forbids one to commit any act of aggression even to stop others from undertaking much greater aggression?

According to the deontological view, the deaths of innocent civilians in World War II presumably made that war an atrocity on libertarian grounds, regardless of the greater crimes a victorious Axis might have committed. And if, to prevent those civilian deaths, one could have assassinated Hitler in 1939, but only by also killing an innocent bystander, one should have refrained from doing so, sacrificing tens of millions of innocents to avoid killing one. If, moreover, to spare the bystander's life as well as millions of others, one could have assassinated Hitler in 1938, but only by knocking off the hat of another innocent bystander, the latter act of aggression, too, must stand condemned by deontological libertarianism.

This is the position Rothbard has to defend if he is to avoid an environmentalist state committed to rectifying the rights violations he has himself condemned by embracing the principle of harm. For only by construing libertarianism as strictly deontological can Rothbard maintain that uncertainty about the identity of the victims of harmful pollution should prevent a libertarian legal system from banning it. He writes:

> Evidence must be constructed to demonstrate that aggressor A in fact initiated an overt physical act invading the person or property of victim B.[19]

> The prevalence of multiple sources of pollution is a problem. How are we to blame emitter A if there are other emitters, or if there are natural sources of emission? Whatever the answer, it must not come at the expense of throwing out proper standards of proof and conferring unjust special privileges on plaintiffs and special burdens on defendants. . . .

> In libertarian theory, it is only permissible to proceed coercively against someone if he is a proven aggressor, and that aggression must be proven in court (or in arbitration) beyond a reasonable doubt. Any statute or administrative regulation necessarily makes actions illegal that are not overt initiations of crimes or torts according to libertarian theory. Every statute or administrative rule is therefore illegitimate, and itself invasive and a criminal interference with the property rights of non-criminals.[20]

> . . . *Statistical correlation . . . does not in itself establish proof of causation.*[21]

Is libertarianism, then, a doctrine of personal moral purity, or rather one that would minimize what it defines as evil? If it is the latter, then activities

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that emit harmful pollutants should be enjoined, on the grounds that they violate the rights of sovereign person- and property-owners—even in the face of uncertainty about which polluter is responsible for harm to which victim, or whether a given polluter is responsible for any harm at all. If two gunmen fire six rounds apiece into a crowd, hitting and killing seven people, both could, in this view, be prosecuted for murder, even if nobody could prove which victims were killed by which criminal. Similarly, someone observed poisoning a city's water supply with a substance that induces heart attacks could be prosecuted if, subsequently, more heart attacks occurred than usual, even though the identity of the victims remained unknown. Nor would a libertarian legal system, under this interpretation, refrain from prosecuting a conspiracy of poisoners each of whom added an innocuous quantity of poison to the reservoir, which taken together made the water lethal—despite the impossibility of identifying who they each killed. By the same token, even an "accidental conspiracy" of poisoners—such as automobile owners whose cars emit nonlethal amounts of carbon monoxide that together are statistically correlated with higher death rates—should be punishable. Finally, there would be no reason for such a libertarian system not to promulgate a "statute or administrative regulation" that prohibited accidental conspiracies in advance, even though it could not be shown, except statistically, that the aggregated effects of the prohibited actions constituted harmful aggression.

In Rothbard's view, by contrast, the highest obligation of a libertarian judicial system is to be sure not to dirty its hands with aggression, even if by doing so it could prevent greater aggression. It is difficult to imagine how such a legal system could enjoin or punish any crime whatsoever, for inasmuch as there is never complete certainty as to the guilt of the parties thereby coerced, it is always possible that any action to forestall or punish aggression will itself turn out to be aggressive. No police officer—indeed, nobody acting in self-defense—could, in this view, ever fire a weapon, since the bullet might hit an innocent party. Again Rothbard finds himself in an unviable position: surreptitiously sanctioning the harm principle, he must now hedge it about with evidentiary requirements so unyielding that they would render libertarianism sterile. In the end he must move even farther away from libertarian principles by adopting the extraordinarily vague doctrine of "reasonable doubt" in order to allow legal authorities *some* latitude in the face of uncertainty. How Rothbard squares this doctrine with the imperative of deontological purity, or ensures that it should not be interpreted to allow legal action against accidental conspiracies of polluters, he never reveals.

In view of Rothbard's track record as a libertarian theorist,[22] it may seem unfair to libertarian environmentalism to focus on his arguments for it.

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Yet his is the most detailed attempt to apply libertarianism to environmental problems, and the difficulties he encounters in doing so seem to spring from its very essence. Each time he sidesteps the environmentally extremist implications of libertarianism, he reaffirms the core problem of the doctrine: its claim that what justifies an action is who chooses it (i.e., the individual free from physical aggression) rather than whether it leads to an intrinsically good outcome—or, if one prefers, its *equation* of freedom with the good. Conflicting goods are ruled out of court.

Thus, Rothbard declares that "utilitarian considerations must always be subordinate to the requirements of justice" (defined in libertarian terms).[23] Yet there can be little doubt that it is precisely a realization of the unutilitarian consequences of disregarding those conditions that puts Rothbard at war with his own principles. He does not explain *why* "we must refine our concept of invasion to mean not just boundary crossings, but boundary crossings that in some way interfere with the owner's use or enjoyment of his property,"[24] but the reason is obvious: otherwise, every involuntary physical interaction between human beings sharing the same atmosphere would count as aggression and would have to be proscribed. Similarly, when Rothbard suddenly adopts the concept of harm a few paragraphs after rejecting it as mischievously vague, he further constricts the applicability of libertarian principles, again saving them from the consequences of being implemented in the real world. With these two steps, Rothbard manages to reconcile libertarianism with the existence of two or more human beings on earth, but at the price of empowering the state to police people's interactions to be sure that they are not harmful. This requires Rothbard to endorse a strictly deontological reading of libertarian principles, further narrowing their scope. Having first fended off the ultra-environmentalism to which libertarianism logically leads, Rothbard has now fended off the welfare state only by disallowing any action against crime. Libertarianism has been shrunken down to the vanishing point. Only by conjuring up the arbitrary standard of "reasonable doubt" does Rothbard resurrect his dead doctrine, or at least a ghostly image of it.

Free-Market Environmentalism as Postlibertarian Policy

No such intellectual contortions characterize the other school of thought that has been considered in this issue of the journal, free-market environmentalism. Indeed, Rothbard's defense of libertarianism is explicitly directed against the Chicago-school insights on which free-market environmentalism is based.[25] But as Herman Daly, Mark Sagoff, and Albert Weale show,[26] market-based or market-like solutions to environmental problems are no substitute for libertarianism.

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Such free-market environmentalist measures as tradeable pollution permits may well be better at reducing environmental degradation than command-and-control regulation: by giving polluters financial incentives to use knowledge of their production processes and facilities to find ways to reduce pollution, they make polluters' self-interest coincide with aggressive pollution reduction, while under traditional regulatory regimes, polluters have the incentive only to comply grudgingly with environmental commands imposed by relatively uninformed central authorities. But this efficiency advantage has already led to the widespread adoption of free-market environmental devices without making the governments employing them any more libertarian: by not banning pollution outright, they continue to violate the libertarian prohibition of physical boundary crossings.

If anything, free-market environmentalism provides merely what one analyst calls "an important message for the modern regulatory state,"[27] namely that it is best served by trying to "maximize individual incentives. This," he notes, "may well include versions of privatization, such as transferable emission rights, but will hardly include a wholesale substitution of the environmental regulatory system," since "most environmental resources are incapable of being accurately priced."[28] The pricing of environmental goods that is generated by free-market environmentalist devices relies on an initial political determination of how much a given pollutant should be reduced. A government must first decide which pollutants to control, then by what amount, before it can know how many emissions permits to issue. The market in such permits does not *replace* politics; it supplements it by providing the most efficient means for achieving politically determined ends.

Even worse, there is no apparent free-market solution to the most difficult environmental problems, such as global warming and ozone depletion. In order to avoid this conclusion, the most prominent free-market environmentalists are reduced to denying the existence of such problems a priori by closing their minds to the possibility of unwelcome climatological evidence[29] or to imagining some technological solution to the problem of tracing atmospheric emissions, as the only alternatives to inaction or to a gigantic extension of state power over economic activity under the rubric of sustainable development.[30] In the case of global warming, however, tracing emissions to their sources is inconceivable, given that every breath one exhales and every instance of combustion generates greenhouse gases. Thus, neither environmental coercion nor the growing environmentalist state can be abolished by free-market environmentalism, unless there turn out to be no scientifically credible forms of global atmospheric pollution. Unless that happens to be the case, free-market envi-

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ronmentalists might best be seen as technocrats devoted to streamlining the operations of the megastate.

At its best, free-market environmentalism amounts to the undoctrinaire appropriation of the same sort of consequentialist economic insights that libertarians transform into the non-consequentialist dogma of the intrinsic value of individual freedom (narrowly defined).[31] Thus, free-market environmentalism is a form of postlibertarian public policy.[32] But as we have just seen, it is a policy program of drastically less ambitious dimensions than the radical antistatism with which libertarianism began. There seem to be few or no alternatives to such a free-market meliorism on environmental issues. On the one hand, libertarian environmentalism is untenable even on its own grounds. On the other, free-market environmentalism is statist at its core.

Why should this statism make its proponents uncomfortable? The answer, presumably, is to be found less in economics per se than in politics, at least politics as seen through the lens of economics: that is, in the perception among those who understand the economic benefits of free markets that, as shown by the routine disregard for free-market tenets in political discussion, *politics is irrational*, so that environmental policy that is politically rather than economically driven is liable to be demagogic and wasteful.[33] As Terry Anderson and Donald Leal suggest, "global warming policies are formulated in the same political arena as economic policy, and in that arena a mixture of incomplete theory and bad information do not give us a recipe for success."[34]

The conviction that political decision making is irrational is arguably one of the key components of the mindset that is receptive to both libertarianism and free-market environmentalism. But it is not very well reflected in either approach, since it neither warrants the antihuman extremes of libertarian environmentalism nor the statist starting point of free-market environmentalism. Is it possible that free-market environmentalism could be modified so that a more rational decision-making procedure than democratic politics could determine which pollutants to reduce and by what amount?

Depoliticizing the Atmosphere

The atmosphere is now a classic case of common property, the privatization of which seems impossible. It is conceivable, however, that equal rights to pollute the atmosphere could be given to every human being, and then traded among them. This would accomplish nothing unless each pollution voucher were limited in quantity, but it is at this point that democratic politics, with its susceptibility to simplistic but vivid appeals,

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usually enters the picture. How else, though, to determine how much to reduce which pollutants than by means of countrywide or worldwide systems of representative democracy?

One possibility would be to allot to each person annually the right to his or her equal proportion of each designated pollutant emitted over the previous year. This would still require political decisions about which pollutants to "share out," but by giving people the right to an equal share in the amount of each pollutant during a past time period rather than setting a pollution-reduction goal, it would remove at least one category of what should be scientific decisions from political determination: the category of quantity. To be sure, how much pollutant X should be reduced would not now be decided scientifically; political decision making would be replaced by market decisions.

Industries that wanted to engage in activities that required more than their owners' per-capita share of pollutant X would have to buy excess shares from others, creating a market in shares. Most people would presumably be willing to sell their excess shares for pecuniary reasons, but environmentalists would be able to withhold their excess shares from the market, if they felt strongly enough about it, and to bid in the market for the right to retire others' shares. Every share thus retired would reduce the amount of the pollutant emitted that year, meaning that the baseline quantity of rights distributed in all subsequent years would be that much lower. Conversely, as the base of available rights shrank each year, their price would rise, slowing the reduction of the pollutant in proportion to the cost to industry of conserving it. The net effect would be consistently but ever more gradually to push down the allowable level of the pollutant, while imposing costs both on those who wanted to emit a pollutant and those who wanted to reduce it. Those who favored pollution reduction would have to pay for it by buying shares and forgoing the profits that would have accrued from the shares they retired; industries (and the consumers of their products) would have to pay for shares from everyone else, leading to a redistribution of income to the impoverished (and partially mitigating the political unfeasibility of the idea by giving industrializing countries' residents an economic stake in it).

The purpose of environmentalists' public relations efforts would shift from swaying the ill-informed public with hair-raising stories of environmental doom toward convincing people wealthy enough to afford paying for environmental protection that reducing pollutant X, as opposed to Y or Z, would be worth their financial sacrifice. There is little reason to expect this smaller audience to be more sophisticated than the mass audience that is now targeted, but at least it would bear the costs of its convictions rather than shifting it to others. The point is not that industrialists'

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chilling forecasts of economic catastrophe due to environmental protection are inherently more truthful than the folklore of their adversaries; it is instead to underscore that the new system would pit environmentalist propaganda against industrial purchasing power in the battle to persuade people to retire or sell their shares.

For that reason, would this proposal handicap environmentalists, who would no longer be so capable of leveraging their relatively meager resources into broad public support through the mass media? Yes, because they would now be competing against the huge material incentives offered by industrialists eager to buy shares. But on the other hand, once a pollutant were "shared out," it would be guaranteed to be reduced by *some* amount every year—which is more than can be said of the status quo.

The main political battles would be fought over which pollutants to share out; but here the decisions might be more rational than they currently are. It is much easier for an uninformed electorate to decide if, say, CO_2 should be reduced than by how much. On the other hand, since quantitative decisions are now less likely to be made by electorates than by politically insulated bureaucrats who may bring expertise to bear, it is conceivable that turning them over to the market would result in scientifically less rational decision making than at present.[35]

This thought experiment suggests the following tentative conclusions.

First, not only is there no feasible libertarian environmental policy: no free-market environmental device seems to be able to achieve what might be taken to be the postlibertarian goal of completely depoliticizing decision making, although there might be ways of depoliticizing *to some extent* both the means of pollution reduction and the determination of the amounts to be reduced.

Second, even those types of depoliticization would not in themselves produce more rational decisions. They would temper the irrationality of environmental discourse in modern democracies by redirecting the debate to the preferences of participants in the markets for pollution rights rather than the preferences of voters in mass elections; but since the issues around which these preferences would be arrayed would remain nearly as distant from the expertise of most market participants as they now are from that of most voters, any gain in rationality would be slight. The irrationality of public debates about environmental issues is a function not only of democratic politics, apparently, but of the scientific complexity of such issues. In the case of complex economic issues, the self-interested expertise of market participants *can* result in aggregate decisions that are collectively rational, thanks to the information-transmitting role of a market price system; while when economic decisions are made politically, rational decision-making demands of the electorate an unattainable degree of theo-

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retical knowledge.[36] But in the case of the environment, there are no evident mechanisms that can translate self-interest into collective rationality: the decision about how much to reduce a pollutant would still rest on the unscientific judgments of laypeople observing through propagandistic filters a debate among experts, even though their decisions would be rendered through their retirement of shares rather than their votes for more environmental protection. There seems to be no escaping the difficulty of reaching decisions about such issues short of leaving them up to the experts directly, in which case deciding which experts to empower would become problematic.

Third and consequently, one begins to wonder whether depoliticizing decision making should serve as the goal of a postlibertarian political orientation after all. Recall that depoliticization seemed to emerge as a putative goal of postlibertarian public policy once the impossibility of achieving the atomistic goals of libertarianism—not to mention the internal inconsistency of those goals[37]—and the statism of free-market environmentalism sent us searching for the underlying motivation of both approaches. But if depoliticization would not result in appreciable gains in rationality, then even if the overwhelming political barriers to the type of depoliticized environmental regime just considered could be overcome, perhaps it is no more worthwhile as a policy program than is libertarianism.

What, then, is left of postlibertarianism? That is, what is left of the libertarian impulse once it is stripped of its dogmatic instantiation in Rothbardian political theory; and what, besides a preference for more efficient government, is left of free-market environmentalism?

The fact that no decisive *policy* program follows from the idea of depoliticization does not mean that the idea has no value. I suggest that its value is, at this juncture, that it may help us better to understand the politics and culture of modernity. Marxism survives its economic defeat by assuming the form of a system of ideas that problematizes the role of class in our understanding of the modern world. Similarly, libertarianism now faces a kind of political defeat, for while the Austrian-school argument against socialism has been proven valid, libertarians may be unable to offer any internally consistent reason to oppose the welfare state;[38] and even more clearly, there seems to be no escaping the environmental state. This deprives postlibertarians of any all-embracing normative ideal. Yet if the initial impulse behind libertarianism was an empirical observation about the nature of modernity—the irrationality of its politics and of democratic culture[39]—then it is appropriate for postlibertarianism to develop as a descriptive rather than a normative system of thought, at least until its insights have been tested and their normative implications debated. In

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short, understanding—scholarship—should now take precedence over political advocacy.

I myself do not see any libertarian alternative to the scholarly course. One might pursue the free-market meliorist's path as part of a socially liberal, economically conservative pressure group within, say, the Republican party, seeking market-based, independent-sector, or local[40] solutions to environmental problems whenever possible, in preference to command-and-control, statist, and globalist approaches. But without an overarching vision of society that does away with democratic or bureaucratic decisions about the environment, this path would be libertarian in name only. Or one might—whether from anthropocentric or ecocentric motives—try to reconfigure property rights so that they do not presuppose atomistic individualism, as Gus diZerega and Laurent Dobuzinskis propose;[41] but this approach, too, would appear unavoidably to involve decision making about what constitutes proper stewardship of the atmosphere, weather patterns, and so forth.

Alternatively, one might consign oneself to political irrelevance by hoping for some way to privatize the atmosphere, the oceans, and the other "tougher problems" faced by free-market environmentalism.[42] One might engage in a form of libertarian Lysenkoism, deciding in advance which environmental scientists to believe by virtue of the political implications of their findings. But if instead one lets go the urge to liberate humanity from the state, casting off the obligation to define a libertarian position on every "issue" (or to defend any position at all), stilling the impulse to perceive everything in politically predetermined categories, the result may be liberation of a different sort: freedom from the tortuous paths dictated by ideological imperatives; freedom to define oneself in terms of one's relationship to truth, instead of defining truth in terms of its relationship to one's dogma; and freedom from the nagging fear that science may reveal a world fundamentally at odds with the picture assumed and demanded by one's deepest commitments.

The environment is the libertarian Waterloo: it reveals the flaws of the doctrine in a way that seems to ensure that no "answer" is forthcoming. Rather than hoping for a miracle that would preserve their fundamentally political self-conception, perhaps the best thing libertarians can now do is put their dreams of changing the world on hold while they attempt simply to understand it.

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NOTES

1. Mark Sagoff, "Free-Market versus Libertarian Environmentalism," CRITICAL REVIEW 6, nos. 2–3 (Spring–Summer 1992): 211–30; Roger Taylor, "The Environmental Implications of Liberalism," ibid., 265–82.
2. Martin Anderson, *Christian Science Monitor*, January 4, 1989: 19; quoted without article title in Walter E. Block, ed., *Economics and the Environment: A Reconciliation* (Vancouver: Fraser Institute, 1990), x.
3. Murray N. Rothbard, "Law, Property Rights, and Air Pollution," *Cato Journal* 2, no. 1 (Spring 1982); reprinted in Block, 233–79. Quotation appears on 237.
4. David Friedman, *The Machinery of Freedom*, 2nd ed. (LaSalle, Ill.: Open Court, 1989), 168.
5. Ibid., 168.
6. Rothbard, 263.
7. Ibid., 252.
8. Ibid., 237, 256.
9. Cf. ibid., 260, where Rothbard counts the "creation of fear" in the victim of an attempted crime as a prosecutable assault. Why, then, does he fail to count fears of the effects of intangible physical boundary crossings as assaults?
10. Ibid., 237.
11. Ibid.
12. Ibid.
13. Ibid., 238.
14. Ibid.
15. Ibid., 267n13.
16. Ibid., 252, emph. added.
17. Ibid, 243.
18. Cf. Jeffrey Friedman, "After Libertarianism: Rejoinder to Narveson, McCloskey, Flew, and Machan," CRITICAL REVIEW 6, no. 1 (Winter 1992): 138.
19. Rothbard, 243.
20. Ibid., 257–8.
21. Ibid., 245.
22. See Jeffrey Friedman, "The New Consensus: II. The Democratic Welfare State," CRITICAL REVIEW 4, no. 4 (Fall 1990): 662, 664–6, 702–4.
23. Rothbard, 258.
24. Ibid., 252.
25. Ibid., 234–6.
26. Herman E. Daly, "Free-Market Environmentalism: Turning a Good Servant into a Bad Master," CRITICAL REVIEW 6, nos. 2–3 (Spring–Summer 1992): 171–83; Sagoff; Albert Weale, "Nature versus the State? Markets, States, and Environmental Protection," ibid., 153–70.

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27. Michael C. Blumm, "The Fallacies of Free Market Environmentalism," *Harvard Journal of Law and Public Policy* 15, no. 2 (Spring 1992): 271–89; quotation is on 373.
28. Cf. ibid., 373, 372.
29. Terry L. Anderson and Donald R. Leal, *Free Market Environmentalism* (San Francisco: Pacific Research Institute, 1991), 160–61.
30. Ibid., 165–7.
31. Cf. J. Friedman, "The Democratic Welfare State," 661–4.
32. On postlibertarianism, see J. Friedman, "After Libertarianism."
33. Cf. J. Friedman, "The Democratic Welfare State," 676–80.
34. Anderson and Leal, 161.
35. J. Friedman, "The Democratic Welfare State," 683–4.
36. I leave aside the argument that retrospective economic voting—throwing out the incumbent party when times are bad, reelecting it when they are good—is a mechanism that rationalizes mass politics, since this is an argument from rationality not in the sense of expertise, but in the sense of rational *ignorance*. Cf. Morris Fiorina, *Retrospective Voting in American National Elections* (New Haven: Yale University Press, 1981).
37. On the internal contradictions of libertarianism, see J. Friedman, "The Democratic Welfare State," 642–4 and 663–6; and idem, "After Libertarianism."
38. Cf. ibid.; Richard Cornuelle, "The Power and Poverty of Libertarian Thought," CRITICAL REVIEW 6, no. 1 (Winter 1992): 1–10; and J. Friedman, "The Democratic Welfare State," 666–76.
39. Cf. ibid., 683–90.
40. Cf. Emery M. Roe, "Global Warming as Analytic Tip," CRITICAL REVIEW 6, nos. 2–3 (Spring–Summer 1992): 411–27.
41. Gus diZerega, "Social Ecology, Deep Ecology, and Liberalism," ibid., at 347–8; Laurent Dobuzinskis, "Is Progresive Environmentalism an Oxymoron?" ibid., at 289.
42. Anderson and Leal, 154.

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Paul Craig Roberts

THE END OF SOVIETOLOGY: REPLY TO NOVE

When *Alienation and the Soviet Economy* was published in 1971 it offered an account sharply at odds with the prevailing view that Soviet planning was a scheme designed by Stalin, with little input from Marx, to achieve rapid industrialization. In the 21 years since the book was first published, I have followed Soviet developments,[1] but I have made no effort to follow the adjustments individual Sovietologists have made to their views as it became more and more apparent that Soviet planning would not be an alternative to the market. The orthodoxy that I challenged in 1971 has no doubt been replaced by disarray. As Aaron Wildavsky notes in his Foreword to the new edition, our scholars did "not have the slightest inkling that anything so drastic and dramatic could occur" as the collapse of Communism.

Alienation and the Soviet Economy was reprinted in 1990, because it offers an explanation of the goals of the Marxian era and why they failed that is as relevant today as it was in 1971. As the one-page preface states:

> The purpose of this book is to explain the operation of the Soviet economy in terms of its organizational principles and Marxian aspirations. I offer a conceptual framework that permits the Soviet economy to be understood

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> as *not* centrally planned. And I show the impact on the operation of the Soviet economy of the original aspirations of Marxian socialism. . . .
>
> Sovietologists have been unanimous in classifying the Soviet economic system as centrally planned. With few exceptions, moreover, Alexander Gerschenkron's conclusion "that hardly anything in the momentous story of Soviet economic policies needs, or suffers, explanations in terms of its derivation from Karl Marx's economic theories" is representative of prevailing opinion.
>
> The analysis in this book supports the opposite classification and the opposite conclusion. It does not claim to be based primarily on new facts that I have discovered about the Soviet economy. I accept the main body of facts assembled by sovietologists and look at them through a different "window." . . . Instead of developing an *ex post* rationalization of these facts, this book traces the development and unfolding of a germinal idea as it moves from an abstract category into the consciousness of men and culminates in history.

A Sovietologist of such long-standing repute as Alec Nove should be able to assess this thesis, especially now that Sovietologists no longer have to demonstrate their objectivity by defending Soviet accomplishments. Instead, Nove pursues blind alleys. To create a vulnerability that he can attack, he asks if "war communism" and subsequent Soviet economic organization can be explained "for reasons of ideology only?" What about the interests of the rent-seeking nomenklatura, which "by the time Roberts's book first saw the light of day . . . cared little for the writings of Karl Marx"?[2]

Nove knows as well as anyone that the Bolshevik revolution was not the work of a bureaucratic class, born fully clothed, setting up a rent-seeking system for itself, and it is pointless to suggest that I ascribe the nomenklatura's resistance to market reforms "to what Marx had written a hundred years earlier." My book is not about the nomenklatura's resistance to reforms. It is an explanation of Soviet institutions, and I make it perfectly clear that the institutions outlived the ideology:

> Over time, the impossibility of achieving a non-commodity form of production in a complex economy has produced sufficient frustration and economic irrationality to weaken and undermine the ideological program for the economy. Today the system of material supply is an institutional legacy of forgotten or vaguely understood aspirations. In the ruins of the ideological program to transform man by transforming the basis for relations among men lives a bureaucratic vested interest. But too much has to be disregarded to find the origins of planning in a bureaucratic vested interest or in a need for a strong military to defend and extend the boundaries of socialism. Lenin, of course, did understand planning as a defense of socialism—but he

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saw it as a protection that followed from eliminating bourgeois consciousness by establishing a non-commodity mode of production.[3]

The same for war communism. "No doubt," I write, "it was a program affected by conditions of the time."[4] But that has never been the issue. The question is whether war communism was "a series of ad hoc measures to combat emergency situations" or "a necessary military measure," as scholars contended, or was instead an effort (affected by conditions of the time) to make a direct transition to a non-commodity form of production. I make a case for the latter and note that those who think ideology was secondary have yet to explain why Lenin would repeatedly describe the experience as one of failed socialist policies. Why should Lenin misrepresent a necessary military measure as a failed transition to socialism?

Nove notes the "ambiguities of Lenin's position" without ever mentioning the central doctrine of historical materialism. Unless we forget that Lenin and his cohorts were Marxists, the revolutionaries' seizure of power presented a fundamental doctrinal difficulty. Since, according to Marx, human institutions and consciousness are determined by the economic organization of society, Russia lacked the basis for a socialist government. Scholars who do not read Lenin have concluded that Lenin was a mere opportunist bent on power. However, as Lenin's writings show, the problem worried him intensely. At first he thought he could create the basis for socialist rule by effecting a direct transition to socialism. When this failed, he reasoned that the socialist "superstructure" could hold on for an unspecified time by Party control of the "commanding heights" (achieved in part by terror), while better preparation was made for the transition to socialism. Stalin later described his own goals in terms of contracting the sphere of commodity production. If Stalin's policy goal was merely the rapid industrialization of Russia, why would he dredge up a forgotten Marxian ideology as an excuse?

It is the neglect of Marx and his impact on the Bolsheviks that leads people to say that "Peter the Great was the first Bolshevik." Peter the Great could not possibly have been a Bolshevik, since such ideas would have been incomprehensible in his time.

To this day Sovietologists have not grasped Marx's concept of alienation and the meaning it gives to socialist planning. Nove seems to think that I have a narrow concept of alienation, limiting it only to the market. What about Soviet workers alienated by their dictatorial and bureaucratic system? he asks. No doubt it is a more real form of alienation than the one imagined by Marx, but it is not the alienation that is the basis of Marx's critique of the market.[5]

Nove graciously agrees that Oskar Lange's theory of socialist planning is only "a simulated world of perfect markets." However, Nove seems to

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think that my critique of Lange is also a critique of the market. He writes: "Roberts does not make it clear that Lange was addressing the problem in a Walrasian context, and so were his critics."[6] But I do! My critique of Lange and the debate over the theory of socialist planning is that a Walrasian general equilibrium market model cannot be a theory of planning. Nove repeats the error (of which I warn on page 103) of confusing the market with its theory. The market is not its theory. It is a real social institution upon which we rely every day to meet our needs.

Confronted by the triumph of capitalism over communism, Nove expresses concern for the fate of inchoate socialist beliefs. Aren't there other, more worthy forms of socialism? Is my account of the Soviet economy just an implicit rationale for "the untrammelled pursuit of private profit"?[7] His review loses its focus and ends with an insistence on the need for "a counterweight to individualistic extremism, which downgrades social needs and neglects externalities." Today, Sovietologists are still too busy defending a socialism that they cannot define to be able to help us understand the role of folly in Soviet experience.

NOTES

1. See, for example, Paul Craig Roberts and Karen LaFollette, *Meltdown: Inside the Soviet Economy* (Washington, D.C.: Cato Institute, 1990).
2. Alec Nove, "Ideology, Planning and the Market," CRITICAL REVIEW 5, no. 4 (Fall 1991): 564.
3. Paul Craig Roberts, *Alienation and the Soviet Economy* (New York: Holmes & Meier, 1990), xxv.
4. Ibid., 34.
5. See Paul Craig Roberts and Matthew A. Stephenson, *Marx's Theory of Exchange, Alienation, and Crisis* (Stanford: Hoover Institution Press, 1973; new edition: New York: Praeger, 1983).
6. Nove, 567.
7. Ibid., 568.

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Alec Nove

THE END OF SOVIETOLOGY: REJOINDER TO ROBERTS

So—what do we disagree about?

There are differences of emphasis as to the relative roles, in "war-communism," of war and of communism. I would give greater emphasis to war, in that several measures typical of war communism were also taken in other warring countries, including (Tsarist) Russia itself. But I never doubted that Lenin and his comrades were deeply influenced by Marxist ideology, and Roberts would not deny that circumstances also influenced the policies of the time.

Second, he dismisses in one short sentence all that goes with the phrase, which I "borrowed" from a Russian poet: "Peter the Great was the first Bolshevik." It can serve as a kind of shorthand for the specifically Russian features of Bolshevism in general, Stalinism in particular. I would give this aspect more weight than Roberts does. In doing so, I would have the support of Stalin himself, who instructed his court historians and film-makers to present Peter and Ivan as his great predecessors, consigning to the dustbin of history the ideas of the Marxist historian Pokrovsky, who had seen them as tyrants and oppressors (as Marx did!) I agree at once that Russian history is only one element in explaining what happened in 1917 and

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after, but its importance has been appreciated by historians of different worldviews: the religious philosopher Berdyaev, the Menshevik Fedor Dan, the conservative Tibor Szamuely, the émigré Alexander Yanov, to name but a few. Leninism was already a Russian "translation" of Marxism, which dismayed such orthodox Marxists as Kautsky and Plekhanov. My late lamented colleague Leonard Schapiro deplored the Bolsheviks' indifference to the rule of law, but did not fail to note a similar indifference in Tolstoy, Dostoevsky, Gogol, i.e. among leading non-Marxist intellectuals. They and other non-Marxists had a profound contempt for Western mercantile values, while the large majority of the peasantry were opposed to a free market in land. There was also a predisposition to accept despotic rule as the only alternative to chaos. All this should figure in one's understanding of the background to the Bolshevik revolution.

In many of its most visible aspects, Stalinism, with its stress on hierarchy, rank, uniforms, military spirit and language ("fronts," "bridgeheads," etc.), police terror and the denial of any rights to workers and peasants, could be said to have departed rather far from the spirit and letter of Marxism. So that, once death removed the despot, the first challenges to the system he had built came from those who pointed to the gap between Marxist doctrine and Communist practice. Raymond Taras has recently edited a book which illustrates this with many examples.[1]

We agree that there is in Marxist doctrine a hostility to the market, and that this influenced policy during and after the revolution. Ideology did strengthen the nomenklatura's resistance to market-type reforms. But it is surely also the case that (any) ideology could be, frequently was, adapted to suit the exigencies of the moment. Since writing my original review I came across this passage in a paper by Deborah Duff Milenkovich: "Ideology as an abstractly given set of goals provides an unconvincing explanation for the organization and strategy choices of socialist societies." She sees ideology evolving so as to "constitute a rationale for the policies preferred by the ruling elite, policies which focussed on their maintaining monopoly control of all important economic and political organizations. Ideology is never independent of the interests of the ruling elite."[2] Leszek Kolakowski, writing of the "Marxist roots of Stalinism," points out that "no society has even been entirely begotten by an ideology or may ever be accounted for by ideas of people who contributed to its origin; anybody is Marxist enough to admit that."[3]

What, precisely, was new in Roberts's original edition of 1971? Everyone was surely aware of the fact that Marx saw socialism and the market as incompatible. The problem was that, once the Soviet system ceased to be "a war economy sui generis" (the phrase is Oskar Lange's), it became increasingly apparent that the attempt to run it centrally was running into

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serious trouble, and that there is a centralizing logic in trying to administer a nonmarket economy. The distortions, mostly unintended, generated by attempts to plan centrally had by then already filled many pages, written in the West by such as Jasny, Berliner, Nutter, Campbell, Grossman, Marczewski, and myself.[4] My first attempt to argue that reform of a "market" type was unavoidable was in an article in *Social Research* entitled "The Politics of Economic Rationality" in 1958.[5] By then Soviet economists too began to face the problem of reconciling received dogmatic theory with the needs of practice. Nemchinov, Liberman, Novozhilov, Kantorovich, Petrakov, Shatalin entered the fray. They were opposed to dogmatists, but by 1965 their influence was sufficient for them to have inspired the so-called Kosygin reform of that year. A key feature of the proposal, which was formally adopted by the leadership, was a decisive shift from material allocation to trade in means of production, i.e. the very thing that, according to Roberts, was excluded by ideology.

However, that reform was stillborn. In his valuable book, *Gorbachev's Struggle for Economic Reform*,[6] Anders Aslund inquires into the reasons, and does not give ideology any significant weight. Lack of support from the party and state bureaucracy, and not what Marx had written 100 years earlier about alienation, are high on his list of causes.

The view that centralized planning did not really conform to its own model is one with which I agree. I headed the relevant chapter of my textbook on the Soviet economic system "Centralized Pluralism."[7] The failure to plan everything from the center was, so to speak, predestined: the sheer scale of the task was a major cause, and this was a factor (among others) that Marx, Engels, and Lenin quite failed to appreciate. In their approach to a future socialism they were romantic utopians. Roberts and I agree: Stalinist-type planning creates much alienation and frustration among its subjects, and this was unforeseen by the founding fathers. A realization that this is so led some who considered themselves Marxists to accept the need for a market. It is true that most of them failed to think through the logic of their own position, and the contradictions of half-hearted attempts to combine plan and market doomed them to failure, for reasons well described by Janos Kornai in *The Socialist System*.[8]

Roberts misunderstands me. I did not think that his critique of Lange was "also a critique of the market." It was or should have been a critique of Walrasian general equilibrium, which not only "cannot be a theory of planning," but also cannot be a theory of a functioning market economy—this for reasons that should be familiar to readers of CRITICAL REVIEW, which has published "Austrian" critiques of such models. To borrow Peter Wiles's apt phrase, perfect competition and perfect computation are both perfect, and cannot exist in the real world.

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This brings me to his final paragraph. As the author of a great many critical pages on Soviet experience, and a whole book devoted to showing the utopian unreality (or "folly," if Roberts prefers the word) of the Marxist vision of socialism and demonstrating the deficiencies of the classical Soviet model, I seem to be the wrong target for his critical arrows. The Soviet system has gone down the drain. Good. It deserved to.

But can we really stop there? Yes, the market "is a real social institution," which meets most of our needs most of the time. But right now it is seriously malfunctioning. It is Roberts's complacent triumphalism that makes me uneasy. Is all well with capitalism and with mainstream economic theories? On August 24, 1992, the London *Independent* states in its financial pages: "This is the worst time for the real economy since 1945," and that "no British government has ever seemed so powerless to make any policy adjustments in the face of the rising tide of unemployment and business failure." The dollar is falling, mountains of debt—governmental, corporate, personal—threaten the stability of the world's financial system, an alienated underclass threatens elementary public order on both sides of the Atlantic, while essential public services are starved of funds. Not an altogether happy moment. Nor has "marketization" been an unmixed blessing in the "East."

To cite the Economic Commission for Europe's *Economic Survey 1991–2*, "it was commonly believed that the traditional communist system was so terribly inefficient . . . [that] if the initial situation had been as bad as it appeared, that is, if the distortions had been so great and these economies so mismanaged, there must have been some programmes that would have clearly made everybody better off." But nearly everyone in these countries is substantially worse off: there has been a most steep decline in output and in living standards, an even bigger decline in investment, a virtual collapse in medical services, with births down, deaths up. While it was reasonable to expect some "minuses" during a difficult transition period, "a dramatic fall in overall production was not seen as a real possibility" by the authors of the reform and their largely Western advisers.[9] This is not a plea for a return to the old system, which, to repeat, is deservedly bankrupt. But the choice is not between inefficient or impossible centralized planning and a textbook market à la Walras and Debreu. Marx's picture of coordinating mechanisms in a socialist economy was indeed naive, unreal, wrongheaded. I have been saying as much for decades. But . . .

Roberts was writing about "Sovietological" matters, and was in no way obliged to say anything about his views on Reaganomics or the Chicago school. But equally it is unnecessary to imply that *we* have a smoothly functioning coordinating mechanism, or that Dr. Pangloss is alive and well, and would be living in Russia if only bureaucratic rent-seekers

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would let him. We should reject Marx and Lenin. Must we therefore embrace Milton Friedman and Gary Becker?

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1. Raymond Taras, *The Road to Disillusion* (Armonk, N.Y.: M. E. Sharpe, 1992).
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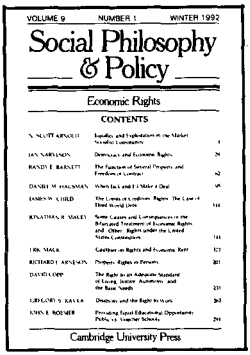

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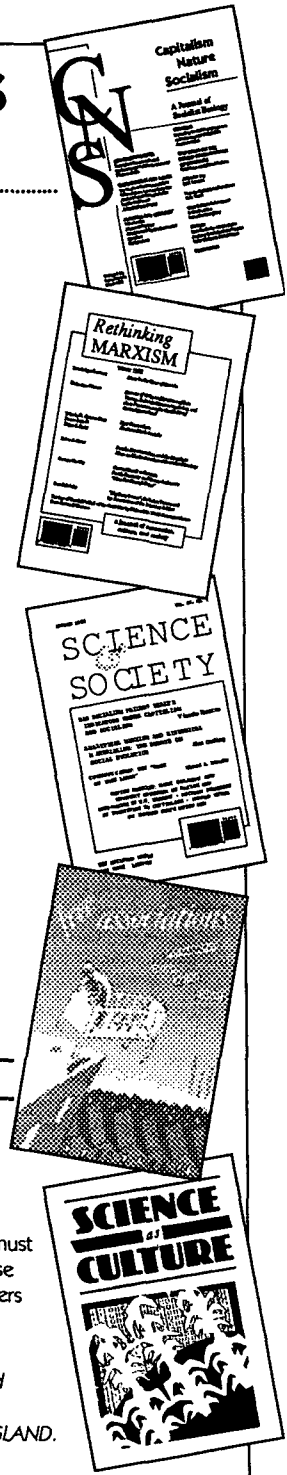

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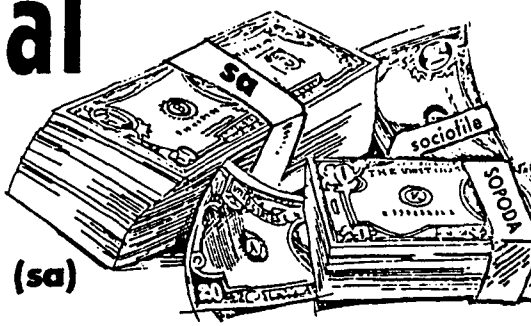

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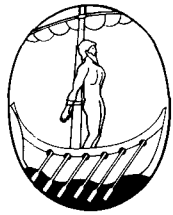

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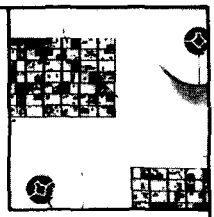

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